Vol. 9. OCT., 1856. No. 4.

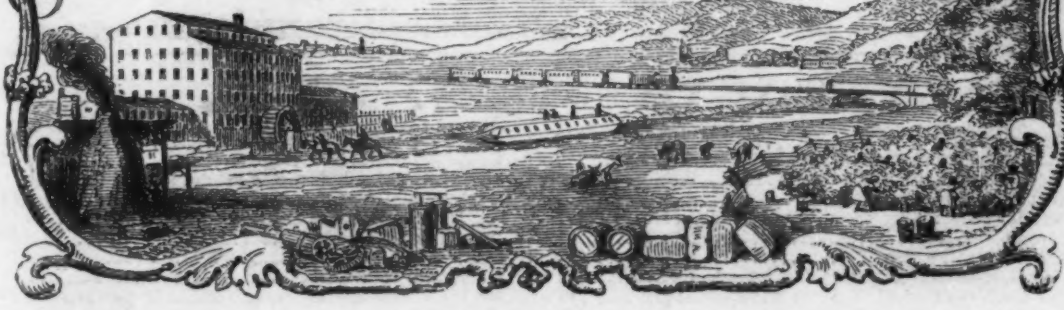
THE PLOUGH

THE LOOM AND THE ANVIL.

DEVOTED TO THE INDUSTRIAL ARTS:

AGRICULTURE, COMMERCE, AND MANUFACTURES.

J. A. NASH & M. P. PARISH, EDITORS.



NEW-YORK:

OFFICE, No. 7 BEEKMAN STREET, CORNER OF NASSAU.

1856.

The Plough, the Loom and the Anvil,

Is devoted to Scientific and Practical Agriculture, Horticulture, Fruit-growing, Breeds of Animals, the care of Cattle, Horses, Sheep, Swine, Poultry, Bees, &c.; to Manufactures, the Mechanic Arts, and Improvements in Machinery; and to Commerce and Mining, in their relations to Agriculture and Mechanics. It is pre-eminently

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NEW-YORK, July, 1856.

J. A. NASH,
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The Plough, the Loom, and the Anvil.

VOL. IX. OCTOBER, 1856. No. 4.

Agricultural.

THE INDUSTRIAL CLASSES.

WHO are they, and what are their rights? These are questions which concern every citizen, and we intend to make them the foundation of a few remarks now, and of more hereafter.

If productive Industry—an employment of the personal abilities in something useful—be the characteristic of the Industrial Classes, as we think it is, then all, who are not idlers, or mischief-makers, or doers of what is no benefit to themselves or others, belong to those classes. By a sort of slang phrase, too common among us, the honor of belonging to the great brotherhood of Industries would seem to be limited to the production of the material necessities of life, as if man could live by food and clothes alone, as if all who were not employed about these and like things were but drones in the hive of humanity. Those who use language thus seem not to have reflected that in society there are other things to be done, and that they are to be done, if for no higher reasons, that the supply of material wants may become more certain and more economical; as otherwise famine might, as frequently as in former periods, decimate the human race, and the labor of providing material supplies would be as disadvantageously done as when corn was planted with a clam-shell, and cotton was wove in a hand-loom. It is as necessary that some should work the mind, as that others should work the hand.

A high Christian civilization cannot be maintained without a great variety of employments. We grant that the more the cultivated mind and the laboring hand center in the same person, the better. But distinctions must exist. The cultivator of the ground never will be the best religious teacher, nor the worker in iron the best teacher of science, nor the philosopher the best cotton-spinner. And yet all of these are essential to the best interests of the whole. We want the cultivator and the mechanic, and we must have the scholar, or we can have none of the others in their perfection. To attempt to get on without him, would be a step towards making such cultivators as planted Cape Cod three hundred years ago, and such spinners as now twist cotton with their fingers in India. But for the patient investi-

gations of the scholar, and the brain-turning efforts of the inventor, we should now be sending our mails on the head of a runner, as they do in Yucatan; and earning our bread by slower, harder, more uncertain processes, than a kind Providence desires we should. The man who grows corn and cotton with a crooked stick is a producer unquestionably. So is he, indirectly, who devises a better way of doing these things. The magnetic telegraph was the result of at least a million experiments on electricity, foolish as they might seem to many—fit only for idlers. But the result was the taming of the lightning—making it do our errands somewhat more expeditiously than the Indian runner of Central America can do them. The thousands of experimenters, all over the civilized world, contributed to this result. They were then producers—they produced that which quickens all other productions and enhances their value. So it is with all, who, by research and experiment, always laborious and often expensive, are extending the boundaries of human knowledge; and so it is with those who, taking up what the pioneers in science have discovered, diffuse it among the masses. All who are busily doing anything which the good of mankind requires to be done, whether it minister to our physical wants or to the higher wants of our spiritual nature, may be considered as belonging to the Industrial Classes. The clergyman —not as a matter of course, not by virtue of his office, but by the exertion of talents suitable to his calling—contributes as much to the world's *wealth*, saying nothing of its weightier interests, as any other; for if he promotes true *religion*—not *religionism*—if the result of his labor is to lead men to *deal justly, to love mercy, and to walk humbly with God*, he cannot fail to render them more efficient, more trustworthy, and if not more enterprising, yet more likely to turn their enterprise into a wise direction. The teacher, whether of the young pupil in the primary school, or of the more advanced in the university lecture-room, contributes his full share to the world's most valued resources. The lawyer does well so long as he transacts our legal business for a fair compensation, and defends our character and property. If he sometimes deals with us more rascally than others would, the fault is his and not of his profession. We do not need that he should do *all* our legislation. That may better be done by all classes, in about just proportions. But as an interpreter of law, a counsellor in our troubles, a defender of the right, he may be eminently useful, and contribute largely to the general prosperity. The physician who performs his duty faithfully, adds immensely to the common security and welfare. The merchant is wanted as a carrier between the producer and the consumer; and so long as he pursues his business on fair and open principles, is eminently useful. Of those employed in literature and the fine arts, we have only to say that

their vocation is far more useful than is generally supposed. What would a nation be without its history, its oratory, its poetry, its architecture, its statues and paintings, its mu-ic and its songs? If we have yet given but little attention to these things, it was only because the time had not come—we had enough to do that was more immediately pressing. A great many are well employed, who are neither working the ground nor its raw productions. It is desirable that a great many should be employed in other callings, as otherwise the farmer could not find a market for his produce, nor the mechanic for his handiwork.

The true policy is, that all branches of industry, all employments suitable for rational beings to be engaged in, should go on hand in hand, as nearly in juxtaposition as soil, climate, and the distribution of mineral wealth permit, and then that commerce should come in to regulate the necessary exchanges. So far as regards those employments not usually denominated industrial, which after all seem to have about as good a right to be so denominated as any other, it is undoubtedly the duty of the State to look after them.

There are minds to be educated, and no State should suffer a child to grow up in ignorance within its borders; there is religion to be sustained, since, beyond all question, the more *religion* there is the less superstition there will be, and without dictating what every man shall believe and how he shall act *religiously*—with the largest toleration—the State has here a duty which no other power can perform; there are mines to work, and the State should never permit these to become oppressive monopolies; there are laws to interpret, and its interpreters, quite as often as any others, require the restraints of law; there is commerce to be regulated, and the merchant is a little more apt to be too sharp for his customer than the reverse. But when we come to the farmer, the mechanic, the laborer, who are *directly* employed in developing the physical resources of the country, while others are only doing this indirectly, the government has peculiarly a duty to perform. Theirs are the sinews both of war and peace. They are the only *direct* producers of necessaries, luxuries, and wealth. But for the annual result of their labors we should have neither, but starvation instead. They practice exhausting labor; they exercise a large amount of intelligence; and they are preëminently virtuous, patriotic, order-loving. Such are their numbers and energy that they could easily overthrow any government, that would not do them ju-tice; yet they are always conservative, oftener at their home work than seeking combinations, even for mutual protection. That the laboring classes should ever combine for a bad purpose, we hold to be an absolute impossibilty. Just look at it; the farmers of this country have been denied their rights, more or less, all the time,

for two hundred years. Who will say, that so long as the British rule lasted, American farmers were not shamefully abused? Where was their market? Perhaps you will say, all over the world. But for heavy produce what is a market all over the world good for? Why put the producer and the consumer far apart, with a dozen sharpers between? The farmer wants a market near at hand where he can meet the consumer face to face, make his own bargain, take his money in full, and not sacrifice a large per cent. for transportation, and a larger for profits to the between man. The teacher, the clergyman, the doctor, the lawyer, the scholar, the editor, the inventor, the machinist, men of all handicrafts, and above all the manufacturer, must be at hand to consume his produce, at a fair price, and that price not much more than he gets for growing it.

A few years ago we bought all our nails of Great Britain. They were poor things—made *to sell.* We paid seventeen cents a pound. A slight protection—whether a "Revenue tariff" for protection, or a protective tariff for revenue, matters little—enabled American enterprise to make better nails at four cents a pound. That the price might have fallen from other causes is nothing to the purpose. It could not have fallen lower than it did, consequently no one has been injured, while many have been benefitted; the machinist found employment, the manufacturer made a small profit, notwithstanding the lowness of the price occasioned by home competition, and the farmer has ever since sold more produce, and at a little higher price, than if the nails had been made in England. It is so with the other branches of manufacture. Americans, if enabled to begin—helped over the bar, or in other words, protected against pauper wages abroad—will run such a competition as will insure reasonable prices, and contribute immeasureably to make us truly independent—creators of our own necessaries, masters of our own resources, dependent for our supplies on none but ourselves. Protection is not necessarily partial. That on nails benefitted the nail maker no more than it did the machinist who constructed his works, nor either more than the farmer who furnished bread and meat to both.

Protection for other articles has operated in precisely the same way—always increasing the demand for farm produce. Under British oppression, the farmers were the bravest to endure, as they were the bravest to fight, when endurance ceased to be a virtue. Under our own government they have fared better—have not been compelled to buy pot-metal nails at 17 cts. a pound, and pay for them in veal at 2 cts., or beef at 3 cts., or cheese at 4 cts. a pound, nor to exchange these products at such prices for flimsy India cotton at 50 cts. a yard—have some incentives to action, to enterprise, to rouse up and secure a competency before the last day of life—but yet the full measure of justice

has not been measured out to the farmers of this country. In England the farmer who puts the same energy and intelligence to the business of the farm, as the enterprising merchant does to that of the counting-room, makes a competency in a few years, and retires, if he chooses, to a quieter life. One reason of this is, that the English spinner, weaver, and a score more, do our work for us, and the English farmer has the profit of feeding them the while. Few American farmers are able to cease from the cares and toils of the farm till very late in life. We do not want they should cease from them. It is not for their happiness to do so. Employment, activity, usefulness, are the comfort of life with them, as with every body else. But we do want that they should be able to let go of the plough, and to rest from severe labor, when old age creeps upon them. We want they should be able to educate their children as well as any other class, for woe to us when we have no more farmers' sons to stand, among others, in the high places of the nation. We want they should be able to dress their daughters, not in fini-finery, but as well as is desirable; so becomingly that they shall not suffer in comparison with the daughters of the merchant and the lawyer. Our farmers, after pursuing their business twenty or thirty years, ought to be able to relax their exertions somewhat, and yet to live in a style of rural elegance and comfort the rest of their lives. Why are they not? There is more than one reason. The great reason, the one always staring us in the face, one that has borne down the American farmer two hundred years, not always equally, not as severely now as under British rule, but severely yet, is that the makers of his coat, his cravat, his vest, his pants, his wife's dress, his daughter's outfit, and above all, of his crowbar, his drag-teeth and his log-chain, are in Europe, eating other men's produce, not his, except as a little is lugged to them three or four thousand miles, not enough to say boo about, compared with the capabilities of this vast country. Some farmers are *shiftless* (that's just the word we can't help using). They never would get ahead any where, nor live (stay) except by depriving their families of the comforts of life. Book-knowledge is a stumbling-block to them, and they have no other. But this is not the general character of American farmers. They are enterprising, inquiring, intelligent. They ought to be well to do by middle life, to be rich at fifty, to pursue their calling leisurely at sixty, rather from the honorable desire of being useful up to the gaol of life, than from any fear of want for themselves, or of not making a reasonable provision for their families. And they would have been —farmers of past generations would long ago have been just what we have described—if manufactures had gone hand in hand with agriculture from the first; that is, if Great Britain, instead of forbidding, had encouraged American handicraft industry, and then if our own govern-

ment had kept a guardian watchfulness over the Industrial interests of the country, causing each article of our wants to be manufactured among us a *little before* that point in a nation's progress when it can be produced here as cheaply as otherwhere. We hold it to be a self-evident truth, that the time when a nation should begin to produce, or to manufacture any given article, is not the point when it can produce it as cheaply as it can be imported. It is a point a little before this; it is when it can produce it nearly as cheaply; and then is the point at which protection can be introduced advantageously to the producer, injurious to none, and consequently beneficial to all; for whatever benefits a part of the citizens benefits the whole, unless it at the same time injures others, and that on the acknowledged principle that—"If one member rejoice, all the members rejoice with it." For instance, if the duty on sugar gives prosperity to the Louisiana planter, does not the Massachusetts farmer rejoice in that prosperity, provided he, in the long run, pays no higher for his sugar; and would he not rejoice in the welfare of his co-laborer at the other end of the Union, even if he should temporarily pay a fraction higher? So, if the Massachusetts manufacturer prospers, in consequence of protection on cotton cloth, does not the Louisiana planter rejoice at his prosperity, provided he, in the long run, pays no more for his cotton goods, especially when he considers that this cotton-spinning makes an ever-present market for his brother farmer in the other end of the Union, and would he not be willing even to pay a trifle more for his cotton goods, if such should be the temporary effect of a duty on the foreign articles? And so again, if a little extra protection of iron would bring great prosperity to the States of Pennsylvania and Missouri, would not the whole Union rejoice in it, provided all the Union could get its iron rails, its ploughs, and its log chains quite as cheaply in proportion to their goodness? And yet such would undoubtedly be the result of a little stiffer protection of iron—immigration would be quickened, there would be an increased demand for farm produce, and every consumer of iron would get the article as well as now, price and quality considered. Protection on any article whatever, is protection to the farmer, provided it does not much enhance the price. We wish our farmers would think of these things. It may become necessary for them to go to Congress before all will be righted. As stated in our last, we like that modesty which makes them say, "We do not want office for ourselves." But let them consider whether the good of the country does not require that they should have it? The lawyers are good in their place. They have often done us good service, and we do not remember that one of them has ever injured us. But as legislators, we think it would be well to have a heavy spicing of farmers and mechanics with them, or if they claim to be the more

spicy, let the solid material be made up from the Industrial Classes, and let a few of them come in as the spicing. N.

MUNN'S PRACTICAL LAND-DRAINER.

A Treatise on Draining Land, in which the most Approved Systems of Drainage, and the Scientific Principles on which they depend, are explained, and their comparative merits discussed; with full Directions for Cutting and Making Drains, and Remarks upon the various Materials of which they may be constructed. C. M. Saxton & Co., New-York, 1856. *Pp.* 190 *Price,* 50 *cts.*

This work has been for some time before the public. Many of our readers, we presume, are already acquainted with it, and not a few, we hope, are putting its recommendations and its sound instructions into practice, in the improvement of their wet lands. The book, we believe, is all that its title-page and preface claim for it—a candid discussion of the benefits of draining, and of the various modes employed. If it has faults—we do not say it has—they consist of a want of clearness in the expression of philosophical principles, and, perhaps, of a degree of obscurity in the practical directions. The work is nevertheless highly instructive. We advise all who have cold, wet lands, to possess themselves of it.

But it is not our purpose to review Mr. Munn's book; we wish rather to condense into a brief space some of our own views on the same subject—views acquired partly from reading, more from extensive observation, and, in part, from the best of all teachers—experience. We begin by assuring our readers that all lands containing stagnant water, either *on* or *under* the surface—even if far under ground—will be rendered much warmer, earlier, and more productive, by removing it. Some have insisted that all land should be under-drained. We have before written, and we do not change our opinion, that if land is dry enough—that is, if the water sinks through it, not stopping on the soil to render the surface unsound, nor in the subsoil, so as to form pools if excavated—it does not need draining, or, at least, would not be improved half enough to balance the expense.

But when land is of such a nature that its surface becomes unsound —soft, oozy, so as to tread up—after great rains, or if the water will stand for any considerable time in excavations of four or five feet, there is but one opinion in the minds of men who have investigated the subject—*it should be drained.* So well is this principle settled in England, that capitalists are perfectly willing to advance the money to drain it, and take no other security than the increased value of the land. Thus: a farm is appraised at £3000; £2000 are required to

drain it; the capitalist advances the money, and takes a mortgage on the land, conditioned that it shall in no case take effect on the original £3000, but only on the increased value above—£3000—so that the owner does not peril a dollar's worth of the original value of his farm. Not as large a portion of land here needs draining as there. Climate and geological formation have something to do with this. But where our lands do require draining, the principle is the same, and the demand is as imperative here as there. The increased productiveness is as sure with us as with them. We admit that the increased profit may not be as great, because here wages are higher and produce is generally lower; but that the increase of profit here is sure, and is very considerable, is among the settled points in our agriculture. The farmer, therefore, who keeps on cultivating water-logged lands, having the money to drain them, or if he could borrow at a reasonable rate of interest, stands in his own light, if he has learned the truth on this subject, and if he has not, he stands in his own darkness.

On the causes of wetness in lands, we could weave long, fine-spun, philosophical niceties, abounding in technical terms and hair-breadth distinctions; but we shall *try*, succeed or not, to dress the subject in the language of common life, to make it intelligible to farmers, whom, by the way, we regard as the most *thinking* men in the world, but yet, from the very nature of their employment, not much inclined to patient, consecutive, long-continued thought on any one subject—fond rather of *digging* after good crops than of that sort of digging which characterizes the scholar in his search after truth; but, like the scholar in this respect, at least, that both, if they dig at the right time, in the right place, and in the right manner, will find hard work, and both will find a rich reward. But to the causes of wetness in land: If you apply water to any part of a sponge, it will pervade the whole, passing downward, laterally, or upward, as the case may require. The same is true of a snow-ball, a clump of peat, a rich vegetable mold, and, to some extent, of common soil. The tendency of a body to draw water into every part of it, to equalize it throughout, irrespective of gravitation, is called *capillary attraction*. By this process water is raised a few hair's breadths above its level in large pores, and many feet in small ones—the height being proportioned to the smallness of the pores. If you place pebbles in a tumbler having a little water at the bottom, the water will rise a trifle higher around the pebbles than its general level. If you fill it with fine gravel, the water will rise more; if with sand, still more; and if with loam, higher still. There is another principle that comes in here. Some substances seize upon water with more avidity than others, and hold it more tenaciously—are *hygroscopic*. Now, between these two principles—*capillary attraction* and the *hygroscopic* nature of certain

soils—it will be evident that land may suffer from water and yet no standing water appear on its surface, nor for a considerable distance below. This would be a rare case, but, nevertheless, possible; and it may form an exception to the rule we have before laid down, that, if no standing water shows itself upon excavating four or five feet, the land would not be improved by draining sufficiently to warrant the expense.

The principal causes of wetness in lands are these: First, where the close texture of the surface-soil prevents the rains passing through, and the water becomes stagnant on the surface. Surface-draining—the cutting of open ditches—applies in this case, if in any. It is a slovenly and very imperfect way of remedying the evil. As we have seen it done, in some cases, with no exercise of good taste or sound judgment, the remedy is little better than the disease. But if done with good judgment and taste; if the sides of the ditches are left so sloping inwards as to keep their place and grass over; if the matter taken out be carried to the uplands where it belongs; if the whole be so done as to leave the surface gently rolling, retaining nature's beautiful forms, with no sharp cuts or hideous distortions of what God made beautiful, it is better than nothing, and may, in some fields, become a tolerable substitute for a more thorough procedure. Second, where, owing to an impervious subsoil, the water is carried along a slope, parallel with the surface, but below it, sometimes oozing out in springs, at others creeping on, just below the surface, till it reaches a brook or an open ditch, or till it comes to a porous subsoil, and sinks into the ground—in either case, about ruining the land. Here again, open ditches are better than none. If the owner has no perception of the beautiful; if he thinks he has a right over the portion of God's heritage entrusted to him to make it look ugly enough to extort a shriek from the man of taste who passes by; and if he will do nothing better, we advise him to cut open ditches—first, along the lowest ground, if there is no natural run low enough to take off the water from the other points; then around the higher parts, to cut off the springs; and then here and there—as a common-sense view of the grounds requires. Be it understood that we do not advise to such draining, but upon the above conditions, nor with them, but with some misgiving; for we confess that we are not theologian enough to know exactly what is the penalty for making a piece of land look as ugly as this process certainly will. In lieu of a better course, *it will pay;* and that is about all we want to say about it. Third, where the subsoil is impervious over a large tract, with no outlet, and so the water accumulates, forming a water-level more or less below the surface. This condition could always be detected by excavating or boring down. Here, surface-draining would be of little use.

The owner of land should look for the cause of the water which troubles him, whether it is mere surface-water, kept from sinking by a compact, tenacious surface-soil, or sub-surface-water, not entirely stagnant, but moving slowly, and frequently forming springs, or completely stagnant water, confined by barriers, having its level below ground, and motionless as the water of a pond or lake. He can generally form a correct opinion by observing the character of the soil and subsoil, and the shape of the ground. As there are three principal causes of mischief from water, so there are three prominent modes of draining—*deep* draining, *thorough* draining, and *surface* draining. By the first, we understand the laying down of a few covered drains, very deep, say five or six feet; the second implies many covered drains, placed at short distances, but not as deep, say from two to three and a half feet; the third is sufficiently indicated by its name. We have expressed a pretty thorough contempt for it, and yet there are, undoubtedly, lands, especially those to be used for grass, to which the application of it is wise. We have seen jobs of this kind (in England; we hardly recollect to have seen one in this country) which could be heartily approved—no huge piles of earth along the line of the ditch; no abrupt shoulder to cave in: the sides so descending, by a gently curved slope, that the grass grows to the very water's edge, and even beyond, leaving the field so pleasing to the eye, that you would think man had conspired with the Creator to make it beautiful. The labor was somewhat increased, because more earth than was absolutely necessary was removed; but there was no loss in this—the material being at least worth the expense of removal for composting, or for direct application to sandy or gravelly soils.

For disposing of water below the surface, whether of the springy or the more stagnant kind, either *deep draining*, laying a few very deep drains far apart, or *thorough draining*, laying shallower drains near each other, is the best policy. Which of these should have the preference in any given case, it is impossible to decide without surveying the ground. The farmer who has any considerable job of the kind in contemplation would do well, unless thoroughly versed in the business, to consult some one who has made it a study, or has experience in it. With only the knowledge on the subject, generally possessed by farmers of this country, we would as soon neglect to consult our lawyer when going to law, or our doctor when sick, as to commence an expensive job of draining without getting the best advice in the matter that could be had.

Of the different modes of constructing under-drains, materials for their construction, and other topics connected with the subject, we must defer to speak for the present, as this article is already too long.

N.

FACTS, FANCIES, (?) AND A MORAL.

Every one in the least observant of rural affairs, knows, that the rearing of inferior animals generally meets but a sorry return, whether in meats, wool, dairy products, or labor, or in that legitimate gratification which the owner may well feel when driving a beautiful span of horses, or working a good pair of oxen, or showing his herds and flocks to a friend. The growers of high-bred animals, with tolerable management, are sure to be better paid; and they are approaching a result, which, however favorable it may be to themselves, will benefit the country still more. That generous rivalry existing between the farmers of Ohio and Kentucky, as to who shall have the best stock, will be worth more millions to the country than they have yet bred fine animals. And every successful breeder may well enjoy the reflection that he is benefitting his own region more than himself. To gain wealth by impoverishing others might satisfy baser minds: to gain it in a way that is conducive to the general wealth, would better satisfy a liberal mind; and this, we undertake to say, every honorable and successful breeder of improved stock is doing. If he is doing well for himself, he is doing better for the community; and every generous man will wish him success. These are *facts*.

It is now pretty generally believed, that by selecting pure-bloods for parents, by pairing them judiciously, and by attending rationally to the natural wants of the parents and their young, you may succeed to a degree that in other times would have been deemed miraculous, in rearing fine animals, making them perfect in form, moderate in their consumption of food, mild in disposition, docile, intelligent, (?) almost human. Some have supposed that if the human race were guided more by reason, and less by passion—that if they were to exercise about half as much discretion for a similar object, as the skilful breeder of cattle exercises in his vocation, there would be a wonderful improvement—that symmetry, beauty, perfection of form, and the corresponding intellectual qualities would be more common, and that man would more readily comprehend and seek the true end of his being—would become more prudent, wiser, more elevated in his aspirations—almost divine. Set these *notions* down for no more than they are worth, if they are *fancies*.

But who would not regret that the race should deteriorate for the lack of a moiety of that good sense employed by the cattle grower, in training the young to a sound and healthy physical condition, by suitable modes of dress, by food convenient to the age, by plenty of romping recreations, by work suitable to both sexes, by riding horseback, and by out-door employments, or out-door amusements? We

have been led to these remarks, so far as they relate to the human species, by an eloquent passage from Dr. Oville Dewey, which we give below, and in which the attentive reader will find our *moral.*

"I must add a word upon our modes of dress. With a climate twice as trying as that of England, we are, on this point, twice as negligent. Whether there is actual violence done to the form in the absurd attempt to make it genteel, I will not undertake to decide; but certainly the bust of an English woman shows that it never was, and never could have been, subjected to those awful processes of girting, which must have been applied in many cases to produce what we see among us. At any rate, the fearful prevalence of consumption in our country is an admonition of our duty on this subject of dress, that ought not to be disregarded. And especially in a country where no limits are set to fashionable imitation—where a man is very liable to mistake upon the door-step his domestic for his wife or daughter—this is a subject that comes home to every family, whether low or high, and comes, too, in the most palpable forms of interest—in the suffering and expense of sickness, and in the bitterness of bereavement.

"But consumption and death are not the only alarming forms in which the subject of female health presents itself. Let any one look at the women of America, and, with all their far-famed delicacy and beauty, let him tell me what he thinks of them, as the mothers of future generations. What are the prospects of the national constitution and health, as they are to be read in the thousands of pale faces and slender forms, unfit for the duties of maternity, which we see around us? Let any one go with this question to their nurseries, and he will see the beginning of things to come. Let him go to the schools, and he will turn over another leaf in the book of prophecy. Oh! for a sight, at home, of the beautiful groups of children that are constantly seen in England, with their rosy cheeks and robust frames!" N.

VEGETABLE PHYSIOLOGY.

The Germination of Seeds.—The well matured seed contains in itself the *embryo* of a new plant, together with sufficient food for it to feed upon, till it shall have had time to push its roots into the soil, and its leaves into the air, to draw thence nourishment for itself.

The *embryo* exhibits, through a good microscopo, the perfect form of the future plant, whether tree, shrub or vine. It has but to enlarge itself in the directions already commenced in the parent seed, to become a full grown plant. It consists of a *plumule* and a *radicle.* In whatever position the seed be placed in the soil, the radicle shoots downward, to form the future root; and the *plumule* springs upward, enlarging itself into the stem and branches.

Seeds, if kept cool and away from air and moisture, will preserve

their vitality for thousands of years; and then, if thrown into favorable circumstances, will germinate and send up vigorous plants. Some have disputed this, but facts show it beyond a doubt. It should be considered here that the food, on which the embryo is to grow into a young plant, and on which it depends entirely in the first stage of its growth, is contained in the parent seed, and consists of starch, gluten and albumen.

Moisture, warmth, air and a partial absence of light are essential to germination. When these conditions are supplied, the first change observed is a swelling, an enlargement of the seed. There is also formed early, within the seed, a minute portion of vinegar. As cider by fermentation, tends to become vinegar, and actually becomes such, if the fermentation be continued sufficiently long; so some portion of the seed is transformed into vinegar, or acetic acid. The object of this pretty clearly is, that the vinegar—acetic acid—may combine with bases immediately around and below the seed and form acetates, which we know to be very soluble, and may be regarded as a sort of pap for the infant plant, while yet it can neither reach after, nor could digest stronger food.

About the same time with the formation of vinegar, another substance is formed in the seed, called *diastase.* This substance, diastase, is known to have the power of transforming starch into sugar. That this is the object of its formation, there can be no doubt, for it actually performs this office. In a dry kernel of wheat there is no sugar. There is starch, a substance with which all are acquainted; there is gluten, a tough, stringy substance, which remains about one's teeth after chewing wheat a long time; and there is albumen, a liquid substance, similar to the white of an egg; but there is no sugar. If you taste a grain of wheat before it is put into the ground, you perceive no sweetness; but if you taste it after germination has commenced, you find it sensibly sweet. Diastase has then been formed; and it has done its office; it has transformed the starch into sugar. But why? The answer is plain. Starch, as every housekeeper knows, is insoluble in cold water; and only partially soluble in hot, forming with it, not a limpid solution, but only a thick, semi-transparent jelly. Sugar, on the other hand, dissolves perfectly in either cold or warm water, and forms with it a limpid solution, just adapted to the tender organs of the infant plant, when first it puts forth its rootlets to feel after food. It is manifest, therefore, that the formation of vinegar and diastase in the germinating seed is a provision of that Being, who is wonderful in working, for the express purpose of furnishing nutriment to the plant, at a period when it could not otherwise obtain suitable food. If the husbandman will show a like care to give his young plants a vigorous start into life, he will prove

himself a co-worker with the great Architect of all things. His plants will take care of themselves bye-and-bye. By a prudent forecast, in preparing the soil and selecting the time, he should take care for their infancy. More than is generally considered depends upon the setting out of a plant on its summer's career;—not that, by due care of its infancy, it can be made so powerful that it will contend successfully with poke and pig-weed for the food of the soil; or that it will resist the encroachments of horned-cattle and swine; but if well started, it will draw for its productiveness, more largely than it otherwise would, from the soil and the air.

A portion of that which makes our crops grow is at our own disposal. Another portion is in common stock, blown about by the winds of heaven. Now if we use well that which is at our own disposal, we get more from the common stock, for we make our plants more vigorous and far reaching in their efforts to take care of themselves. This is one of the many ways in which Divine Providence rewards the diligent husbandman. He, for instance, scrapes up a load of manure, after his less diligent neighbors thinks he had got all. He puts it on his corn-field; he not only has a return for what he puts on but his applying it enables his young plants to gather as much more from the soil and the passing breezes.

There is another fact worthy of notice. It has been proved by the most accurate experiments that seeds, during their germination, and up to the time when the first leaves shoot forth, absorb oxygen and give off carbonic acid, directly the reverse of what takes place subsequently. Now why is this? Probably that the young plant may have plenty of carbon in solution about its roots, and may receive through those organs temporarily that which it is destined to receive from the air through its leaves as soon as they shall have been formed. It seems very much like a special provision for the plant, while in transition from the soil below to the atmosphere above. When the plant is fairly above ground, and has put forth its first leaves, it then draws its carbon, which makes not less than half of its solid matter, principally from the air, taking it in through its leaves; while it derives nearly all the other substances of which it is composed from the soil, taking them in through its roots.

Seeds then may be regarded as packages done up for the purpose of perpetuating the species to which they belong. Each package contains one or more embryo plants, so developed as to appear, under the microscope, almost precisely like the parent plant. Together with the embryo, and generally packed closely around it, is enough, and in most cases, especially if the seed be perfect, much more than enough, of food to nourish the embryo plant, till such time as its roots can take nourishment from the soil and its leaves from the air. The em-

bryo lies dormant till the circumstances required to arouse it to action are supplied. In a chestnut, for instance, there is a chestnut tree, not more perhaps than a thousandth of an inch in length, yet strongly resembling the full grown tree in all its parts. This becomes no larger till warmth, moisture, air and a partial exclusion of light are supplied. When these are furnished, it begins to enlarge itself, taking its food, first from within its own shell and then from the earth and air. Its enlargement, while feeding on the food specially laid in for it, is called the germination of the seed; its enlargement from that time onward, the growth of the plant. On this latter we shall have something to say in a future number, which may not be only interesting to the young, but useful in its application to practical agriculture. N.

FARMING—ITS RELATIONS TO SOILS, ETC.

If we look at the history of farming in this country, we shall find that it has been a very general practice, particularly in the Eastern States, to cultivate farms with an almost sole reference to the wants of the farmer's family. As many as possible of these wants were to be supplied from the farm; and then a surplus of a few articles, as a little butter, a few eggs, a cheese or two, occasionally a fatted calf, a farrow cow, a steer or two, a colt, a yoke of oxen, a few pounds of lard, a little pork from the barrel, anything that could be spared, was to supply the rest.

It was natural that this state of things should obtain in the early settlement of the country. It could not well have been otherwise. Luxuries were then unknown. Plain food and coarse clothes were all that were desired; and those were to be drawn from the soil, and elaborated by domestic industry. The farmer's family must live from the farm. The minister, the doctor, the merchant, the blacksmith, and the carpenter must be paid in kind, or not paid at all, for there was then no money, or next to none, in the country. The farmer had to ask, not what his farm would produce most advantageously, but what he must have; and this point being settled, he could generally accomplish his object, because a virgin soil possesses a wide range of capabilities. It could produce bread and meat, flax for summer wear, wool for winter, hemp for hanging rogues, heretics and witches, and whatever else was essential to *staying* in the world, or being *hurried* out of it.

It is not wonderful, therefore, that the practice of raising whatever the family needed, whether the soil were adapted to it or not, and of raising little else, except what could be disposed of in the immediate neighborhood, should have obtained a strong foothold among the early

settlers of this country. A want of roads suitable for the transportation of heavy produce may serve as an apology for the intermediate generations between them and us. It is not so much our business to blame the past as to retify the present. We would not too much blame our forefathers even for the free use they made of hemp, especially since all civilized nations of that age did the same to a tenfold greater extent; and we certainly should not blame them for farming in a way that would be unwise in our greatly altered circumstances. We may better inquire, how far we are blindly following their practices—practices which were in adaptation to their circumstances, but which are ill adapted to ours?

A farmer in Massachusetts, by the name of *Marble*, was asked to what market he sent his produce. His answer was, that he sent it to *Marblehead*, meaning that it was consumed at home. His farm, from the nature of its soil and its location, was at that time capable of producing a staple, which would have enabled him to purchase all else that was wanted by his family and to become rich in a few years. But he kept on growing a little wool, a little flax, a little corn, a little of everything that had been grown by his ancestors, but no considerable surplus of any thing. The consequence was, that he became a very poor man. His returns from *Marblehead* did not give him the money wherewith to pay his store bills, his taxes, etc. It is a question worth answering, whether many farmers are not traveling in the same direction—cultivating a farm with their own hands, raising a little of everything, sending it to *Marblehead*, or some other *head*, and getting nothing in return, which will enable them to educate their children, extend the comforts of their families, and be generous men in society? Another important question is, whether their farms, many of them at least, are not such, by nature and location, that, if they would addict themselves mainly to some one or two branches of farming, they might, in this age of railroads and steam and good markets, advance in wealth and happiness and usefulness.

A farmer at no great distance from where we write, is trying an experiment. It has now been in progress some half a dozen years, and its object is to show whether or not three acres of medium land can be so cultivated, that after paying for all the labor and all the fertilizers, and for taxes and the interest on the original value of the land, they will give a net profit equal to that of the average of farms of a hundred acres each, in the same country. So far as the experiment has yet gone, it is entirely satisfactory. He can show a balance for profit far beyond what would be claimed by most farmers of a hundred acres in that country. And this result has not been reached by the growing of some fortunate crops which happened to bring a great price just at the time he wished to dispose of them. He has

grown only such crops as are always wanted in the markets of this State, and has sold them at no higher prices than they have borne in these markets, time out of mind. Whatever may be the final result of this experiment, there can be no doubt that the profits of many farms could be greatly increased by a more through cultivation than they now receive. An unwillingness to pay for a sufficient amount of labor is among the greatest obstacles to profitable farming in this country. High farming is shunned, because costly, instead of being courted because profitable.

But we were to speak of farming in its relations to soils, location, the taste of the cultivator, etc. That sort of *omnibus* farming, before spoken of, where the farmer grows all sorts of products, rears all kinds of animals, and deals in horse flesh, beef, cheese, butter, lard, pork, mutton, wool, turkeys, geese, chickens, eggs and feathers, having a little of some of these to spare after supplying his own family, is well enough in its place, because there are farms adapted to it, and there are tastes which could hardly be satisfied without it—farms, that are divided by nature's bounds into mowing, plowing and pasture, and men who would sooner be dabbling into everything, than doing anything efficiently. But it is evident that such kind of farming is not the best adapted to promote individual or national wealth. If it is in some cases necessary, in order to conform to the requirements of nature, and if it is desired in others, in order to gratify a craving for variety; it certainly is not desirable as a whole nor generally. True, it affords a variety of employment; but each branch must necessarily be on a small scale; and the whole tendency will be to belittle the farmer, both in mind and in wealth. He almost necessarily becomes a sort of "Jack at all trades and good for none." Such at least is the tendency of one man's pursuing all the various branches of farming, and all, of course, on a petty way.

We would by no means advise to violent changes. Let every owner of a farm carry it on as he has done heretofore, or, if he pleases, as his fathers have done, till he can clearly see a better way. But we would advise a young man, or any other, who is about to purchase a farm, to look out for one, which will admit of one or two branches being conducted on a liberal scale. Let him select such a farm as will favor that branch, or those branches of farming for which he has a relish. In this way he will be likely to become an adept in his business. But most farmers, if we may use a Yankeeism, are already *fixed*. They own a farm; its location cannot be changed; and they do not wish to leave it. Still there is even here great room for the exercise of choice, for many farms are equally adapted to several branches of production. Of four men, it might happen, that while all would rely upon the general operations of the farm for a living, one

might choose to look to the rearing of horses, as affording the main hope of accumulation, another to the products of the dairy, another to the sale of grass-fed, and another to that of stall-fed beef; and it might be that the same farm would answer well for either of these courses. There is, therefore, some room for choice on the part of farmers already located, as well as much on the part of those whose field of industry is yet to be chosen; and there cannot be the least doubt, that it contributes as well to national as to individual prosperity, that each man should pursue a branch of industry for which he has a fondness, because in that he will be likely to excel.

Next to the importance of each farmer being suited with his employment, is that of each farm being put to its best use, or, if it admits of several uses, then to that use for which it is as valuable as for any other; and we would have every farmer in the land ask himself, not what he would undertake to produce if he were on some other farm; nor what his farm might best produce if some other man were on it, but what is the best use that can be made of that very farm, such in soil and surface and location as it is, himself being on it, with all his tastes and predilections, the circumstances and wants of his family being taken into the account? An intelligent settlement of the question, what is best to be done with each farm, and each part of it, located as it is, rich or poor in soil as it may be, rough or smooth, rocky or feasible, well watered or otherwise, with due regard to the feelings and circumstances of those who occupy it, would be worth millions upon millions to the agricultural interests of our country; and yet none but the farmer, in each case, can settle this question, because many of the circumstances, which would bear upon the case and modify the conclusion, are known only to himself.

We would not ask the farmer to concede that his former course has been wrong. It may have been right in its relations to the past; and yet a different course might be better suited to the altered condition of the present and the future. We are suspicious that some modes, which have served well enough to get through life with heretofore, will afford but a poor bridge to go over on hereafter; and while we would counsel no violent changes, we do wish that all farmers would lay themselves open to the questions we have suggested. We believe that it would lead in some cases at least to the adoption of a less belittleing variety of petty employment, and to a more manly, vigorous and successful production of one or two of the great staples of life, such in each case as the farm is best adapted to produce.

So much we have said, mainly with reference to Eastern farming, with acre patches, fences innumerable, and too many briar hedges, in our mind's eye. Whether our Southern and Western brethren are running into an opposite extreme—having two broad fields devoted

to a single staple, with not sufficient regard to the supply of home consumption—is more than we know. We conceive that error in this direction would be possible, but not half as likely to happen as in the other. It takes 52 rods of fence to inclose a square field of one acre, whereas 8 rods to the acre will inclose one of 40 acres; and it is pretty much so with the other expenses of small fields, as compared with large ones. N.

ENTOMOLOGY.

We invite the attention of farmers, especially of young farmers, and of farmers' children, the girls as well as the boys, while yet at an age for keen observation, to the articles appearing in our Journal, on those insects at once so insignificant and yet so fearful, that they sometimes desolate whole countries, constituting the subject of entomology. Let no one think the science insignificent because it treats of life in a small way. Those insects which can, and often do, baffle all the efforts of man, are not too insignificant to deserve our attention. In confirmation of our views of the importance of this subject, we quote from T. Glover, Esq., the distinguished entomologist, connected with the Agricultural Bureau of the United States Patent Office. Let us invite all our readers, and above all the boys and the young men, to what he says about the birds as *destroyers of insects.* The birds are our best friends. *Don't kill the birds.* Mr. Glover says:

"A close study of the habits and transformations of any one of the pernicious insects, (ball worm, wheat midge, caterpillar, &c.,) by the practical and intelligent farmer, would prove not only a source of great pleasure, as leading him to a keener sense of the beauteous and wonderful works of nature, as exemplified in the singular transformations insects undergo before they assume the perfect or fly-state, but also a source of great profit, as by experimenting upon them in all the stages of their existence, he might perchance discover some practical method by which their extermination could be effected. Indeed, it is absolutely necessary that a farmer should be able to recognize the insects that destroy his crops, in all their various and wonderful transformations, before any effectual remedy can be applied; as in one stage of their life they may be suffered to live and enjoy themselves; nay, even sometimes be protected, while in another stage we persecute and destroy them by every means in our power. For example, the beautiful butterly of the *papelio asterias.* Any humane and kind-hearted farmer, unversed in entomology, who should see his children chasing and killing the beautiful black and yellow spotted butterfly that was flitting joyously over his vegetable garden, in the spring or early summer, apparently leading a life of mere harmless pleasure, would, no doubt, reprove them for wantonly destroying such a pretty, harmless insect; and yet, if the truth was known, this pretty and

much-to-be-pitied insect is the parent of all those nauseous-smelling green and black spotted worms that later in the season destroy his parsley, celery, parsnips and carrots. Yet by merely crushing the parent fly at one blow early in the season, before it has deposited its eggs, he would be spared the vexation of either seeing his plants devoured and seed destroyed, or having the disagreeable task of picking off, one by one, some hundreds of caterpillars later in the season. This fact will be more apparent when I state how incredibly fast some insects multiply, especially in the warmer climate of the South, where there is little frost to destroy vegetable life, and there are several generations in one season. Dr. John Gamble, of Tallahasse, Fla., assisted by myself, dissected a female ball-worm moth or miller, (an insect which, in the caterpillar state, is most destructive to cotton,) and we discovered a mass of eggs, which, when counted, amounted, at the least calculation, to five hundred, duly hatched, for the first generation, say one-half males, the rest females; the second generation, if undisturbed, would amount to 125,000, and the third be almost incalculable.

"Now, these mother-flies are not very numerous early in the season, owing to the birds devouring them, the rigor of winter, and various other accidental causes, and if practical means were found to destroy them as early in the spring as possible, the immense ravages of the second and third generations might be prevented. In one female (œceticus) case or hangworm, so destructive to the shade trees, I counted nearly eight hundred eggs, although the specimen was but small. Now, were all these cases taken from every infected tree in the winter, when they can most easily be seen, owing to the fall of the leaf, and then immediately burned, the trees would be comparatively free the next season; and by following this plan for one or two years more, the work growing gradually less and less, the insect might finally be exterminated, inasmuch as the female never leaves her case, but forms her nest of eggs inside; and yet these noxious pests are suffered, year by year to increase, when so little trouble would destroy them. Other insects again have other habits, which, if fully known, would likewise lead to their destruction."

AGRICULTURAL PAPERS.

As many of our readers may wish to take more than one, and as now is a good time to subscribe for them, and leisure time for reading them is at hand, they may expect some hints from us, as to which would best meet their wants.

Of the *New-England Farmer*, Boston, Joel Nourse, publisher, Simon Brown, editor, we have already spoken in terms of high praise. Of the *Country Gentleman*, Albany, Luther Tucker, Esq., editor and publisher, we say, that in our opinion, a better agricultural and family newspaper can not be found. The *American Agriculturist*

is an excellent agricultural monthly, by Orange Judd, Esq., of New-York. *The Homestead*, at Hartford, Ct., Rev. Wm. Clift and others, editors, is an excellent journal. Mapes' *Working Farmer* contains more labored articles of great length and solid merit, exceedingly instructive to the reader, than almost any other. The *Boston Cultivator*, Sanford Howard, Esq., editor, is full of sound instruction on all questions pertaining to stock, and is a good family paper, of an agreeable variety, and of an excellent moral tone. The *Pennsylvania Farm Journal* is first class in appearance, and in amount and value of matter. The *Genesee Farmer* is one of the oldest, the cheapest, and, in our view, one of the *best* monthlies. Such being the good qualities of the foregoing journals, we care not to speak of faults, if they have them. The West is full of good agricultural papers: as the *Rural New-Yorker*, the *Ohio Farmer*, the *Ohio Cultivator*, the *Michigan Farmer*, the *Prairie Farmer*, the *Wisconsin Farmer*, the *Valley Farmer*, at St. Louis the *Ohio Valley Farmer*, at Cincinnati, the *Western Farm Journal*, at Louisville, and several other valuable papers in Kentucky, Tennessee, and California.

The South, too, is well supplied with this species of literature, in the *Southern Planter*, at Richmond, Va., the *Carolina Cultivator*, at Raleigh, N. C., the *Southern Cultivator*, at Augusta, Ga., the *American Cotton Planter*, at Montgomery, Ala., the *South Carolina Agriculturist*, at Columbia, S. C , the *Soil of the South*, at Columbus, Ga.,—all good, besides many others; and last in our order, not in merit—the oldest, and if not the best, as good as the best—the *American Farmer*, at Baltimore, Md., founded, we believe, and long conducted by the same worthy gentleman, who was the founder, and for some time the conductor of our own Journal—the late Col. Skinner.

Our opinion is, that every farmer should have at least two agricultural papers, one in his own region, and one more distant and general. Intelligence is immensely important to agriculture. A farmer, who is feeble in body, cannot do hard work, will hereafter get on better, if read up on his business, than one strong as Sampson, without that advantage.

If, in commending the wares of others, we seem to thwart our own interest, be it so. We rejoice in the well-doing of our co-laborers, and try to do as well as they. And to the farmer who would take a local agricultural paper in his own region, and one of a more general character, emanating from this commercial metropolis, we commend *The Plough, the Loom, and the Anvil.* N.

INSECTS INJURIOUS TO VEGETATION.

DIPTERA, CONTINUED.

We vainly thought we had so treated of musquitoes *et id omne genus*, that we need take no further notice of them, but have since been more tormented with them than before, as if from spite, and are safe from them only when beneath the folds of a well-arranged net. Then, their music is not so unpleasant. But we hope soon to break up all connection with them; meanwhile, proceed with the order already commenced. There is a group called

Anthomyiadæ, or Anthomyians, or Flower flies. They are of a grayish-black or ash color, hairy, with large copper-colored eyes, surrounded by a narrow white line. They measure a fourth of an inch in length. The larvæ of these insects are often found in the roots of vegetables, as radishes, turnips, etc. They finish their transformations, and appear above ground late in June.

One species of these flies is the Anthomyia Ceparum, or Onion-Fly, which, in its maggot state, is very destructive among onion-plants, both in Europe and in this country. They lay their eggs upon the leaves of the plant, close to the earth, and when hatched, the insect makes its way directly to the heart of the onion. In about two weeks, the maggots come to their growth, turn to pupæ, and come out as flies a fortnight afterwards. This fly is seen on our windows in the spring. It is ash-colored, sparingly covered with black hairs, has a forked, rust-colored spot on its head, and three lines of a rust-red on the thorax. Near the shoulders, the wings are tipped with yellow. The only effectual treatment of this insect is, as soon as the plants are affected by them, to pull them up and burn them.

The Ortolididæ. Some flies of this group deposit their eggs in the stems, buds, and leaves of plants, and thus produce tumors, or *galls*, within which is the young insect. Others lay their eggs in the pulp of fruits, as whortleberries, raspberries, cherries, etc., which furnishes appropriate food for the young insect. They are named thus from their habit of keeping their wings in almost constant motion, jerking them up and down, and in various directions, so that their thick edges often come together. Some, suddenly raising their wings perpendicularly, run along with them spread somewhat in the form of the tail of a peacock.

Their winglets are very small, or even entirely wanting, and their power of flight is very feeble. They prefer damp and shady places rather than those that are bright and sunny. Their wings are often beautifully variegated, or striped, or spotted with brown or black. The body of the female generally terminates with a pointed tube, with which her eggs are deposited.

The spongy swellings often seen in the stems of the aster or starwort are produced by a species of insects belonging to this group, which are termed *Tephritis Asteris.* It is about one-fifth of an inch in length, light yellowish-brown, with paler legs, wings broad, round at the tip, and clouded with spots, forming three wide but irregular bands across them.

The *Tiophila Casei* is the cheese-maggot, about three-twentieths of an inch in length, black, middle and hinder legs yellowish, and wings transparent.

Various species of insects have been found in grains when the plant is in flower, but they have not been sufficiently examined and described to determine accurately their name or place in a scientific treatise. But we refer to them here for the purpose of saying that they are often mistaken for the Hessian Fly or Wheat Fly, hereafter to be described.

Bot-Flies belong to this order, and belong to the family Oestridæ. They seem to have no mouth or proboscis, so small are these organs. They resemble the Syrphians in form and color. The maggots are thick, fleshy, and white, without feet, tapering towards the head, which is generally armed with two hooks. The rings of the body are also provided with small hooks or prickles. There are many different kinds of Bot-Flies, three of which attack the horse. According to Dr. Harris, one, the *Gasterophilus Equi*, lays her eggs about the knees of the animal. It has spotted wings. A small red-tailed species, the *G. Nœmorrhoidalis*, deposits them about his lips; and the *G. Veterinus*, the brown farrier bot-fly, deposits them under his throat. But we have often seen the same insect, when driven from one part of the animal, deposit her eggs on different parts of the horse, as on his legs, under his throat, etc.

The Oestrus Bovis, or Ox Bot-Fly, lives in large open boils, called wormals, (worm-holes,) on the backs of cattle. It is smaller than the Horse Bot-Fly.

The Cephalemia, or Sheep Bot-Fly, deposits its eggs in the nostrils of the sheep, and the maggots crawl thence into the hollows on the bones of the forehead.

The Flea is a wingless fly. Its technical name is *Pulex.* Its proboscis is between that of flies and of bugs in form, and its transformations resemble those of Flies.

We leave these, and various tribes or genera kindred to them, to make some suggestions in relation to a very destructive family, termed Cecidomyiadæ, or Gall-Gnats. The small but destructive Gnats known as the Hessian Fly and the Wheat Fly belong to this group. The Hessian Fly, as is well known, was named from its supposed introduction into this country by the Hessian soldiers in the British

army. They first made their appearance in Orange County, N. Y., soon after the British had passed through. This origin is not, however, clearly proved. Some other insect similar in habit may have been mistaken for this. Such a mistake would not be strange, since the same is often made even now by those not very familiar with the various species.

Mr. Herrick, who is the highest authority on this doubtful point, gives the following as the peculiar marks of this insect: Head and thorax black; hind body tawny and covered with fine grayish hairs; wings blackish, but tinged with yellow at the base, which is narrow, fringed with short hairs, and rounded at the end; body one-tenth of an inch in length; wings expand one-fourth of an inch, or more. Mr. Say calls it *Cecidomyia Destructor.* It lays its eggs both on the young plants and on the grain in the ear. In this work, they are occupied several weeks. In Queen Anne County, Maryland, Mr. Edward Tilghman discovered them on his grain, in the second week of October. Placing himself in a quiet, reclining posture, in a furrow, he soon perceived a number of small, black flies alighting upon the wheat-plants. One was very near him, and she deposited eight or ten eggs in the longitudinal cavities between the ridges of the blade, when he caught her and secured her in a wrapper of paper. The eggs had the appearance of minute reddish specks. These eggs were kept in a tumbler, containing a little earth, with water, and covered with perforated paper. On the fifteenth day, a small maggot, of a reddish color, was discovered, which made its way down the blade, and disappeared in the earth. The examination was then interrupted. This mother-fly was pronounced by Col. Skinner, our honored and beloved predecessor, to be the true Hessian Fly. It now seems to be well established that such are the habits of this insect; but whether the eggs are ever laid upon the young grains is not quite so certain. They remain in the stalk near but below the surface of the ground, where they go through all their transformations, and without injury to the substance of the stalk, but sucking the sap, their only nourishment. After five or six weeks, they come to maturity, and are about three-twentieths of an inch in length. As they lie upon the tender stalk, and acquire size and firmness, their bodies become imbedded in the plant; and if more than one are thus fixed upon the same stem, the plant is weakened, so that it withers and perishes. Their skin gradually hardens, becomes first brownish, and afterwards a bright chestnut color, which happens early in December. It is then in the pupæ state, is long, egg-shaped, smooth, marked with eleven transverse lines, and is one-eighth of an inch in length.

It would occupy too much space here to give all the supposed details of the changes of this insect, for which we refer the reader to

the elaborate treatises which have appeared in various journals of scientific associations, and in volumes of Natural History. It may suffice, for the present, to add, that soon after the flies come forth in the spring, they are prepared to lay their eggs upon the tender blades of the wheat sown the preceding autumn, and also upon the spring-sown wheat, as it first appears above ground. For about three weeks, they are occupied in laying their eggs, and then they disappear from the fields. Turning to pupæ in June and July, and adhering to the stems of the plant when the grain is gathered, they remain unchanged in the stubble till spring. A small portion of them, however, are carried away with the straw.

In the winged state, this fly is active. Their principal migrations take place in August and September, in the Middle States, and there they also go through their transformatious earlier than in New-England and New-York.

No efficient means have yet been discovered for preventing the ravages of these insects. Among those tending to this important result are the following:

Select the stouter varieties of seed. Miss Morris advises a selection of seed from localities where the insect has not appeared. The land should be kept in good condition. The seed may be steeped in plaster or lime. Sowing ashes both in autumn and spring is useful. If cattle graze among the stubble, they will destroy many of the eggs. Burning the stubble will have a similar effect, especially if the land is also ploughed and harrowed. Feeding the crop, with cattle, in the autumn, is also useful.

There are, also, certain natural enemies of the Hessian Fly, by which a large proportion of the eggs, larvæ, etc., of this fly are destroyed. One of these is the *Eurytoma Destructor*, which is the *Ceraphron Destructor* of Say. It is a shining, black, four-winged fly, about one-tenth of an inch long, and is often mistaken for the Hessian Fly. A species of the Platygaster is another enemy of this pest, and is abundant in the autumn, laying its eggs in those of the Hessian Fly. Some of the four-winged Ichneumon Flies, which are also parasitic, are natural enemies to this insect. P.

LICE UPON CATTLE AND VEGETABLES.

Since the foregoing was in type, we have received a letter from a friend and correspondent in Louisiana, in which occurs the following paragraph:

"Please inform me, through your valuable book, how to kill or destroy lice upon cattle; also, a kind of insect resembling a good

deal in its movements a flea, but a little larger, and with white wings. It has destroyed every thing in our garden for the last five or six months, particularly the young cabbage plants."

Reply.—1st, *Lice upon Cattle.*—These insects are always disagreeable, and uncomfortable to the animals they infest, and when they abound for a long time, produce the disease called *Phthiriasis.* When dust and dirt are allowed to accumulate upon the hide, or when the animal is kept in unwholesome stables, this disease is liable to appear. So, too, it may be communicated by contact. Under ordinary circumstances, lice cause animals to lose flesh, and they often wound themselves by gnawing the parts thus irritated, or by rubbing against trees, etc. The lice also produce wounds, and cause the skin to become hard and tight, and the hair rough and thin. Bad or insufficient food prepares the way for these insects. If they become weak from any cause, they are peculiarly exposed to such attacks.

This enumeration of causes suggests the most important means of cure. Thorough and frequent cleaning and currying (two or three times a day), good and abundant food in good air, and a clean stall, are essential parts of any treatment. Washing the animal in a decoction of tobacco leaves, in a strong lye, is a common treatment, though it may be carried to excess. For sheep, blow tobacco smoke through bellows (so fitted as to burn the leaf in a side opening) among the roots of the fleece—the fibres of the wool being separated for this purpose. Two or three persons will be required to perform this service properly. For the ox-louse, a decoction of the dried flowers of Labrador tea (*Ledum palustre*) is often applied. A brush should be used, and the hide and hair thoroughly wet with it. Ashes may then be sprinkled upon it, or rubbed in. Repeat this the next day; and on the third day, wash with a weak lather of soap. Flowers of brimstone may be given internally.

2d. *Insects infesting garden plants.*—The insects referred to by our friend may be some of the flea-beetles, or *Halticæ*, which term is applied to a group of several species of small insects, one or two lines in length. These insects are described on pages 141 and 142 of the last volume (Sept. 1855), with the remedies in best repute. We add to the suggestions there made, that shade, coolness, and rainy weather are unfavorable to their increase. The plants, when set out, may be dipt in a solution of wormwood, and afterwards occasionally sprinkled with the same kind of solution, till they are too hardy and vigorous to be seriously injured by the insect. Or, after a heavy dew, sift fine dust over the leaves. A plat of grass, separating these seed-beds from all places infested by such insects, is a pretty effective security, as the grass interferes with their leaping. A good soil and

careful culture are also important, as the plants will sooner be beyond the reach of such attacks.

If this description of the *Halticæ* does not suit the insect which so annoys our friend, it may belong to the genus *Psylla*, of the order *Hemiptera*, being one of the many kinds of plant-lice. They, too, have the power of leaping, and have large and transparent wings. They are described in pages 333 and 334 (Dec. 1855) of the last volume. Soap suds, tobacco water, etc., may be applied, or tobacco smoke. If they have descended below the surface of the ground, salt water may be applied; but this should be done with care, as it is liable to destroy tender plants.

If neither of these suit the case which prompts these suggestions, we should be glad of a more particular description, and a few specimens in a small box, by mail. P.

NEW-JERSEY MARLS.

For fifty years past, these marls have been used in New-Jersey to a very limited extent, and not at all without the limits of the State. It is only within the last twenty years that they have been used freely in the vicinity of the localities where they are readily accessible. They occupy a large area, but are overlaid with a stratum of clay, and with drift of reddish sand, gravel, etc., so that the favorable exposures for export are rare. In the interior, the exposures occur along the streams, and are sufficiently frequent to furnish supplies for the region through which the formation extends.

These marls contain the essential earthy constituents of vegetation, namely, silica in combination with potash and soda, forming the soluble silicates; together with lime, phosphoric acid, protoxide of iron, alumina, etc., and some organic matter. They are evidently of marine origin, for they abound in marine fossils. The organic remains of myriads of generations of denizens of the deep, belonging to remote ages, lie buried in thick layers, and have in latter times been lifted, in some instances, as much as one hundred and twenty feet above the present water level; and thus form an immense storehouse of the means of fertility for the present generations of men.

They are called marls because they contain considerable portions of carbonate of lime; but the formation is distinguished among geologists by the name, "green sand marl," from the fact that it is known in this country, and in France, as the "green sand formation," corresponding nearly, in place and age, with the chalk beds of England. This name is derived from the distinguishing feature of the formation,

which is the powder-like grains, of a green color, containing the elements of value in agriculture, and constituting the principal bulk of the beds.

It is but recently that phosphoric acid has been found in the marl. Professor Cook, however, determined this element to be quite a constant constituent. Other chemists have demonstrated the same fact. But with our present knowledge of the composition of the marl, and after allowing all that may be claimed for the action of the soluble silicates, phosphates, and the carbonate of lime, in promoting the growth of vegetation, there are still results to be accounted for, arising from its application, that are considered due to other agencies than the earthy constituents.

It is not uncommon for sand fields of native sterility—the almost exclusive produce of which had previously been Indian grass, or sand bur—to be made permanently productive of corn, potatoes, the grasses, and cereals, in ordinary rotation, by the application of the green sand marl alone; and, to account for such results, Professor Cook and other geologists favor the view that, in the chemical transformations of the iron (its absorption of additional equivalents of oxygen), ammonia is taken up by it, and again given out to the growing plants coming in contact with it. It seems difficult to account, on other grounds, for all the effects resulting from the application of this remarkable fertilizer.

Whatever causes may be assigned for its activity in promoting the growth of vegetation, we know it to be an admirable means of improving lands, of which New-Jersey has hitherto enjoyed the monopoly. Thousands of acres of poor, unproductive land in that State, formerly considered worth next to nothing, are now producing heavy crops, and are held at high prices, solely by the influence of these marls.

In connection with this subject, we call attention to the notice of "The New-Jersey Fertilizer Company," in our advertizing sheet; having fully satisfied ourselves of the value of these marls, and of the fact that, owing to its location by the seaboard, they will be able to furnish it on favorable terms. N.

We perceive that Messrs. Halladay, McCray, & Co., of Ellington, Conn., are the manufacturers of Halladay's self-regulating wind engine, an ingenious machine for the purpose of drawing water, churning, sawing wood, cutting straw, turning grindstone, and various other farm work. Those who are wanting a labor-saving power on

their premises—one which will work well in a gentle breeze, and not too violently in a tempest—might do well to communicate with the above-named gentlemen. Their prices we perceive vary, according to the size of the mill, and the amount of machinery connected with it, from $50 to $250. N.

CHLORIDE OF LIME.

This compound may be formed from lime and salt. Salt, being composed of chlorine and sodium, will give up its chlorine to lime, if the two be mixed under favorable circumstances—making a compound, or rather, a *mixture*, in which chloride of lime will be a prominent part, but will be mixed with some quick lime, considerable caustic, soda, and perhaps a little hyperchlorite of lime. This com pound or mixture is of a rather caustic nature, and should not be applied, in an undivided state, to the roots of plants; but we have long believed, that if reduced by a proper diviser, as swamp mud, leaf mould, or rich loom—or if mixed with barn manure at the time of its application, or while it is accumulating—or even if thoroughly incorporated with soil, without other division—it would be an excellent manure for worn soils, well worth the attention of farmers, at least in those parts of the country where the ingredients, lime and salt, can be obtained at a small price. Our only hesitation has arisen from the few favorable reports we have heard of it from practical farmers. Others may suggest ways and means of increasing the productiveness of land, but the farmer is the ultimate judge in these matters, and we have no respect for any prescription which does not, after mature trial, obtain his approbation. Hence, having seldom heard favorable reports of chloride of lime, we had fallen into a suspicion that it might not be all that we had once believed. But we see, in the *Germantown Telegraph*, an article over the signature B, which professes to give practical results; and though it does not smack as strongly as we could wish of the farmer's style, telling us what they have done and seen with their own hands and eyes, we publish it:

A FACT FOR AGRICULTURISTS.

Mr. Freas:—It is not, perhaps, so generally known as it deserves to be, that chloride of lime is one of the most valuable articles available for top-dressing grass lands. This substance is commonly purchased at the shops, and often at a much greater cost than the cheapness of the materials entering into its composition legitimately sanction. Any farmer may make it. To do this, it is only necessary to slack one barrel of good lime with water, allowing a little more water than will dry slack it, and reduce it to a thick paste. Then dissolve one bushel of common salt, using no more water for the purpose than

will just take up the mineral. This may either be used in slacking the lime, or applied after the water used in effecting that process has been evaporated by exposure. Chloride of lime is a perfect deodorizer, and should always be kept on hand for use when wanted. Made in this way, it will be found to possess all the virtues of the best article from the laboratory of the chemist, and cost less than one-twentieth the price. After being made it should be kept moist. Grass lands, top-dressed with chloride of lime, take a much earlier start, and retain their greenness much longer than those manured with other articles. It produces also a very favorable effect upon cereals—wheat, rye, oats, barley, and buckwheat—and has been used with success on corn, millet, and various other crops.

Some years ago, we said, in a little volume denominated *The Progressive Farmer*, published by C. M. Saxton & Co., 140 Fulton Street, New-York:

Many families make use of chloride of lime as a *deodorizer*, or *disinfecting agent*. They pay for it ten or twelve cents a pound; and, at that, it is ineffectual, unless used in considerable quantities. Peat is cheaper and better. When peat can not by any means be obtained, black, vegetable mould from the edge of the wood, or wherever great quantities of leaves have drifted together and decayed, will answer. If this can not be obtained, there is a sort of home-made chloride of lime, which can be prepared easily, and is worth more for agricultural purposes than it costs. To prepare it, take one barrel of lime and one bushel of salt; dissolve the salt in as little water as will dissolve the whole; slack the lime with the water, putting on more water than will dry-slack it, so much that it will form a very thick paste; this will not take all the water; put on, therefore, a little of the remainder daily, till the lime has taken the whole. The result will be a sort of impure chloride of lime; but a very powerful deodorizer, equally good for all out-door purposes with the article bought under that name at the apothecaries, and costing not one-twentieth part as much. This should be kept under a shed or some out-building. It should be kept moist, and it may be applied wherever offensive odors are generated, with the assurance that it will be effective to purify the air, and will add to the value of the manure much more than it costs. It would be well for every farmer to prepare a quantity of this, and have it always on hand.

It will be seen that our way of preparing this compound differs a little from B's. The difference is not essential. Our way would give less redundant water to be got rid of, and would be a little easier. If any of our readers are in possession of facts which tend to show the value of chloride of lime for agricultural purposes, we should be glad to hear from them. N.

PROFITABLE FARMING.

A GENTLEMAN farmer—we do not mean one who puts on airs, or farms at the expense of money made in other callings, but an earnest, self-reliant, enterprising man; one who farms for profit, and wins—wrote us, last November, as below:

"My carrot crop has just been harvested. I employed a practical surveyor to measure off just one half acre on the west side of the field you saw, and the carrots were all sold by the pound, and I was satisfied of the weight, and found it to be 21,250 pounds. This lot was entered for the premium offered by our society. They required all to be weighed, and thinking it less trouble I sold them on the lot for one-half cent per pound, and received $106 25 in cash for the half acre, besides nearly enough for tops to feed to pay the harvesting. Nothing more was done after you saw them than harvesting and loading teams on the lot. I am sorry that I did not thin one row so as to compare the difference. If any one had told me two years ago that a crop would grow like this, standing, as they did, about ten to the foot in the row, I should not have believed it; but I am now convinced after two trials."

We had visited this gentlemen a few days before. The carrots of which he speaks were exceedingly thick-rowed, not more than twelve to fourteen inches apart, and the carrots a real thicket in each row—two or three to an inch, as it appeared to us. His doctrine was, that they must be so thick in order to shade the ground. They served, as he thought, as a sort of mulching to keep the ground moist. We thought otherwise, that they should be thinned to one in three or four inches, and we are obstinate enough to think so still; though it must be confessed that he has had a great crop without thinning.

The same gentleman wrote: "My onions harvested 900 bushels of a first-rate article, and sold for seventy-five cents a bushel."

The carrots on the west side of his field were no better, as we could see, than those on the east side. The value of the crop on the whole acre must have been $212 50; and the two acres of onions brought him, at seventy-five cents per bushel, $675, making on the two acres of onions and one of carrots, $887 50.

The cost of cultivating was undoubtedly more than is requisite for small crops; but after hearing his statement, knowing him as we do to be a most reliable man, we think the increased cost was little compared with the increase of crops. The net profit was equal to that of some large farms slaternly cultivated. Perhaps we might say a thousand times greater, for we doubt whether there is much net profit in slatternly farming. N.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CROPS IN OHIO.

I WILL devote a few moments to giving you a statement of the crops of this State. We have had, on the whole, a dry season, but notwithstanding the drought our crops of grass and small grain have been an average. Wheat from one-third to one-fourth less than last year—condition fine. Hay and oats put up in the best order.

Corn may be put down in Ohio at about half an average crop—say one-third what it was last year, or a little more. There is a large quantity of old corn in the country, which will do much to feed out the hogs on hand. The pork crop will be below last year's—in my opinion, one-fourth. Respectfully yours,

GRANVILLE, Ohio, Sept. 3, 1856. WM. S. WRIGHT.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CROPS IN WESTERN MASSACHUSETTS.

AMHERST, Mass., July 25, 1856.

MESSRS. EDITORS:—As elsewhere, we had an abundance of rain. Farmers have suffered much from want of sunshine. Dark brown has become the fashionable color for hay hereabouts. The hay crop will be full middling. The prospect for the second crop is uncommonly good. Rye-harvest has commenced. There will be a good yield. Of wheat, but little is grown in this region. Farmers are turning their attention to it. There are no insuperable difficulties in the way of producing wheat in every part of New-England. The high prices of grain which have ruled for the last two years will be likely to put the ability of farmers to the test.

Oats never looked better. There will be an abundant yield. Potatoes promise well. The amount planted is unusually large. If the blight and the rot let them alone, the poor man's staple and the rich man's luxury will be abundant at twenty-five cents per bushel. The corn crop promises well. Never was there a greater breadth planted. Broom corn does not promise so well. Broom brush is a staple product of this valley. Till quite recently, most of the corn brooms used in the States were produced on the banks of the Connecticut; and now, I believe, more of the corn is raised in the old county of Hampshire than in all the rest of the Eastern and Middle States. It pays much better than Indian corn, but requires the best of land and skilful culture. The scarcity of grains, and the low price of tobacco, have caused the *weed* to be greatly neglected in this region. For

several years past it has been cultivated to considerable extent, without difficulty; but a little Yankee skill can readily convert it into "honey dew," and the best of "Spanish cigars." Apples will be very abundant, and so of most kinds of fruit. Unless some sudden and unforeseen calamity should befal us, scarcity will soon give place to abundance, and the avocation of the breadstuff speculators will be gone.

I like the idea of National Thanksgiving. Certainly it was never more appropriate, and I hope you will assist in passing it around.

Yours, R. B. H.

[The above was mislaid, but as we happen to know that its statements are very accurate, and that its predictions are now verified, we give it a place.—Eds. P. L. & A.]

APPLE TREES BY THE ROADSIDE.

In Germany it is common to line the highways with choice varieties of the apple. The owner marks alternate trees by tying to them a red string, which in that country means, "If you will leave this fruit you may have the rest;" and we have been told, though we cannot vouch for the truth of it, that the public generally keep the contract faithfully. Would it be so with us? We fear not. But have we not agriculturists who would set a few Goldensweets, Summer Pippins, and some fall and winter varieties along the highway that skirts their land. They might not profit much by it. Their children might not. But many a poor child, whose parents own no soil, might have delicious fruit without stealing it; many a wayfarer might regale himself on it; and the owner would have the satisfaction of knowing that, in so far at least, he had been a *benefactor*. N.

TRANSPLANTING TREES.

The time for fall transplanting is at hand. Perhaps we may say it is here. Trees will do well, transplanted any time from now till winter, if set properly, if firmly staked up, and if (in case of early setting) the whereas it is for fall transplanting. Mulching is necessary for either, ground around them be thoroughly mulched. Spring transplanting has this advantage, that staking is not absolutely necessary to success. Our climate is variable. Under the influence of scorching suns, the ground is now hot and then cold, now drenched with rains, and soon

dried. Covering it with any sort of rubbish—straw, coarse hay, shavings, leaves, chips, sawdust, spent tan, etc.,—tends to equalize the heat and moisture. Ground that has such a mulching over it, receives heat from the sun slowly and imparts it slowly. Its temperature varies but a few degrees the whole year. And it retains moisture, when all around is parched. Now this holding the soil to an equable temperature and securing it against lack of moisture, is just what nature does for the trees of the forest.

In setting trees, broad holes should be dug; the roots should be laid in their natural position; the tree should be set at the same depth as it before stood, possibly a little deeper if the soil be light, and not quite as deep if the soil be heavy; nothing but pure soil, and that not over rich, should come into contact with the roots; water should be applied sparingly, just to moisten, not to drench the soil. The ground should then be covered four or five inches deep with some sort of mulching. This will fully prevent the necessity of after watering; and, if the work be done in the fall, the tree should be carefully tied with listing, or some other soft material, to a stake driven firmly, and having such a patch that the tree can by no possibility rub against it. Some portions of our country are becoming too destitute of trees. Forest trees, properly disposed, add to the picturesqueness of the landscape. They moderate the climate, affording a healthful moisture to a climate otherwise too dry. If placed about our buidings, they shelter us from the winter's blast. In summer, they invite the birds, and these destroy the insects. Here we say, cherish the society of the birds. Set trees for them to nestle in. Plant hedges, if you can do it about as economically as to build fences, that they be a covert for the birds and increase their number. Above all things, don't shoot the birds, nor suffer your children to break up their nests.

We have mentioned only a few of the advantages of the forest trees. They will produce fuel and timber enough to pay for all the labor of transplanting. If you will set rock maples, the soil being suitable, they will be worth something for sugar. They are a beautiful and clean tree. But don't set them within sixty feet of ground you wish to cultivate. They are remarkably exhausting to the soil, rendering it cold and heavy. Who does not love trees? If any, let him speak, for we are afraid he will come to an untimely end, perhaps by the gallows, or some other way not desirable. N.

THE OHIO WINE CROP is estimated at 500,000 gallons. The quantity bottled for Mr. Longworth this season is one hundred and fifty thousand bottles, and with that added to his previous stock he has now in cellar full three hundred thousand bottles, mostly quarts, of which twenty thousand are of Isabella. The demand rapidly increases. The wine business, it is said, is second only in value to the great grain staples of Ohio.—*Edgefield Advertiser.*

EXERCISE, WORK, HEALTH.

A Word to Farmers' Girls.—In some recent words of encouragement to farmers' boys—*boys*, how we love them, and why shouldn't we, since *half* the hopes of the country rest in them, and we have a prodigiously long row of our own—we intimated that we might thereafter find space to say something for the girls, on whom rests the other *half* of our hopes, more especially for farmers' daughters. We can now only fulfill that promise by renewing it, as we have sometimes been obliged to pay old notes by giving new ones, and expect to be again, unless our readers are pretty prompt with us; but still we have a few *present* words for the country girls, and if there should be any future words they will find them.

With regard to the boys, all would agree that they should grow up *healthy*, *strong*, *robust*, broad-shouldered, deep-chested, inhaling at least a quart of heaven's elixir at every breath, and that any education which does not produce this result is miserably defective. All would agree that, in addition to their school education, which at best is little more than a preparation of the mind to acquire knowledge, boys should read, investigate, treasure up useful information, become intellectual—should be able to work, willing to work, never for a moment giving in to the ridiculous notion that labor is disagreeable or dishonorable, but yet intelligent enough to be able to choose their own employment, and not be restricted to a single kind of labor, as not knowing enough to do anything else. All would agree that boys should grow up to reverence their Maker, to respect their superiors, to conciliate inferiors, to live and let live, take care of No. 1, and get to be large-hearted. With a body strong enough to labor at anything, a mind adequate to direct labor advantageously, and a heart to use both for the best purposes, what could not a boy do when he has grown a man? He could take care of himself and a few more if necessary. Certainly he could.

But we have not yet learned why the girls do not need very much the same things—*good health, strong minds, and kind hearts.* If the city misses and their mamas will have it, that narrow shoulders, shallow chests, and crooked forms, artificially concealed, are better; if a thimble full of air is enough for them to inhale at once; if common prudence is vulgarity in their estimation, what then? Why we have lived long enough to know that it would be utterly in vain for us to battle away at their fashionable follies. But we have a good deal of faith in the country girls; we do not believe their mothers will be against us; and we tell them, with some sort of expectation that our counsels will be heeded, to run the pastures when they get out of

school; to jump the fences, and laugh loud enough not to disturb the neighboring villages; to knock off brother Sammy's or cousin Billy's cap so good naturedly as to make him laugh loud enough to stretch his very ribs; to pick the delicious berries, and disappoint father and mother with a treat for tea that they did not expect; to do all sorts of innocent things that make girls strong and active. It does a young lady no harm to be strong;—she need not use her strength to flog her brother or her future husband, but it is well enough to have it. What an idea is this, so common among us, that a woman, in order to be engaging or interesting, must be a frail, weakly thing! Ideas are potent, and that false idea is doing more in our country to deteriorate the race, than a hundred wise men can say to counteract its influence. To farmers' daughters, we say, scout such an idea. Put it away as you would poison. What, must everybody, and everything else—your father, your brother, the very animals on the farm, be valued for being healthy, vigorous, agile, but you only for being a sickly, puny, half-developed being? It is absurd; and again we say, run, jump, tumble down if you can't help it, and then get up again; ride horseback, on a good side-saddle if you have it, but *ride* at all events, learn to manage a horse, and if you should learn how to saddle and harness one, no harm would be done; above all things, help your mothers about their work, and do it so cheerfully, that every turn you take will do you good. Nothing is better than house work to develop and mature the female form physically, and remember that whatever may be your lot in life, you will never be fit to have the charge of a house, unless you know what is to be done in it and how to do it. Health, strength, agility, is just as necessary for you as for your brother; and the way to get them is much the same for you as for him—play, frolic, out-door exercise, riding horseback, suitable work, anything that brings all your muscles into use, and makes you breathe *unrestrainedly* a great deal of pure air.

Knowledge too is as necessary for your sex as for ours. In addition to your school education, read. Do not read too long at once. Read sitting erect. We do not want you to grow crooked. To suffer yourself to grow crooked is to lay the foundation for ill-health as well as ill-looks. Do not read in a light that makes your eyes ache. We do not want your eyes to become prematurely dim. If you read trash, we are sorry, because it takes up your time for reading something useful. Read such works as you would like a younger brother to read, who you hope will become a sensible, intelligent, good man. What a ridiculous idea, that a woman should be *pretty*, but needs not to know much. We can see no reason in the world why she should not be strong in health and in mind. Her education should indeed

have reference to beauty, because this is in itself a boon, and more especially because the very means which promote it, tend to higher ends —health, strength, usefulness, happiness, longevity. The romping, riding, running, reading, thinking, trying to be helpful and useful, which we have commended, all tend to give you beauty—not a mere ficitious beauty, which falls to few and may perish in an hour—but the beauty of health, of intelligence, of ability to discharge all of woman's duties.

To say that women should be as reverent as man, as conciliating, as kind-hearted, and as large-hearted, would sound strangely. In all these things and in whatever is polite, refined, tasteful, more is generally demanded of her, though we think wrongfully. In religious sensibility and moral goodness, in benevolence and refinement, we are not to demand that the daughters of our country should be better than we of the other sex *ought* to be, but we may ask them to set their standard for becoming much better than we *are*. N.

MISTAKES will happen. In our article last month on the Strawberry, the illustration which should have been inserted on page 150, was unaccountably omitted. Here it is, perhaps better late than never.

Fig. 1. Fig. 2. Fig. 3.

Fig. 1 is a perfect flower, with stamens and pistils—Hermaphrodite—self-impregnating. Fig. 2 is a Staminate or male flower. Fig. 3 is a Pistilate or female flower.

BENEFITS OF THOROUGH DRAINING.—A friend writes us, that five years ago, he harvested forty acres of wheat and produced two hundred bushels; and in 1856, on the same farm, he harvested from forty-four acres, over eleven hundred bushels of prime wheat, weighing 63 pounds to the bushel. This was caused by good cultivation, based on *thorough drainage* of the land. Who will hesitate, with the multitude of facts pressing upon the public, to attend to drainage where needed upon the farm?—*Iowa N. Y. State Ag. Soc.*

PROSPECTS FOR THE EXHIBITION OF THE N. Y. STATE SOCIETY AT WATERTOWN, SEPT. 30 AND OCT. 1, 2, AND 3, 1856.—The Executive Committee feel assured that the Exhibition, in all its main departments, will compare favorably with their previous Exhibitions. The various breeds of Cattle, Sheep and Swine, will be well represented; and horses will be shown, it is believed, equal to any previous Exhibition in the State. The Implement, Dairy and Domestic Departments, promise to be the most extensive that have been exhibited for years; and the Fruit Show will doubtless do credit to our State.—*Jour. N. Y. State Ag. Soc.*

Mechanical.

THE CULTIVATION OF THE MECHANIC ARTS THE ONLY SOURCE OF GREAT NATIONAL WEALTH.

A LARGE proportion of the controversies between individuals or communities arise from a misunderstanding or misuse of terms. Accuracy in writing is quite as important in the public teacher, as accurate thinking. Indeed, so long as one's own thoughts must be clothed in words ere they influence his own views or those of others, he may mislead and deceive both himself and them by a want of care or skill on this point. Various answers may be given to our inquiry, with more or less propriety, according to the sense in which the terms in which they are stated may be understood.

With the productive tillage land, the forests, and the whole array of facilities for agricultural success already in our possession, or at our control, what do we find? Over immense tracts, even in the older States, settled long before the revolution, tillable lands vary in price from two to three dollars per acre to as many hundreds, when designed for agricultural uses, and to forty or fifty thousand dollars per acre for certain specific purposes.

Millions of acres of wood-land are not worth clearing, while other tracts are worth hundreds of dollars per acre. Yet it is true alike of all, that agriculture, with all its modern improvements, may be carried on in any portion of these lands. Whence, then, this diversity in their value?

Large cities are thickly scattered over some sections of the country, while in others there are but few. Some of these contain immense wealth, and others are comparatively poor. Does the unequal enjoyment of facilities for carrying on agricultural operations occasion these differences?

In many places the products of agricultural labor command a high price, and in others are scarcely worth cultivating. The prices of some small and choice fruits vary from twenty-five cents to a dollar per dozen, while in others, quantities of these same fruits may be bought for a few cents. Is the regard had for agriculture, in any of its phases or conditions, the occasion of these differences?

Rents present the same diversity in value, varying from one to ten, or even twenty, for similar conveniences. The rates of wages range between equally remote extremes. Some able-bodied men cannot command fifteen dollars a month, while others, no more capable than

the former, earn, with the labor of their own hands, three or four dollars per day.

The inquiry we propose has reference to the means necessary to bring up these lower prices to something nearer an approximation of the higher. And how shall it be done? There is a sense in which agriculture is at the basis of all wealth, and of all real independence, and the source of all profit. But this sense is akin to that in which it may be said that good health is at the foundation of true intellectual greatness, or that granite blocks underlying the walls of a building, alone insureb eauty and elegance in the superstructure. The health and the granite blocks are indispensable to the ends proposed, but their existence is by no means an assurance, or even an intimation, that a proper advantage will be taken of the facilities thus offered to genius, and skill, and taste.

The only real question is, how shall these facilities be turned to the greatest account?

Our answer is, BY THE CULTIVATION OF THE MECHANIC ARTS. We cannot doubt that it is the condition of the arts which determines the condition of our social institutions. They lie at the foundation of all financially-improved states of society. Commerce, with all its rich treasures, is the child of the arts. Not a ship would be built but for these. Not a ship was ever built until a demand was made for it by existing arts. This has been the case from the "ships of Tyre," and of "Tarshish" downward; and it is true at the present day. Tax your inventive genius, and, in fancy, build up a community, abounding in cities and rich in its commerce, independent of the existence of the arts. What would your ships carry? Wheat, and cotton, and fruits? To whom would you carry them? For what purpose would they be bought? Without artisans there are none to buy, none to need the raw material. Without the arts communities must be widely dispersed. There can be no concentration of population, of wealth, or of power. The people could be, ere long, no higher, no better educated, no other than a scattered peasantry. For prosecuting great enterprises, must they be powerless, for want of pecuniary means, as well as for want of facilities, and the skill to use them. Their greatest security against foreign aggression would be their poverty. If comparatively rich in anything, they would be the prey of frequent and successful attack.

When, under favorable circumstances, large cities have been built, and vast wealth accumulated, if they have afterwards become divorced from the arts, in the same proportion they have gone to decay. Look at Alexandria, in Egypt; look at Venice; and look the world over. Introduce the arts into a community, or connect the labor of a community with the arts, by the help of commerce, even at a great ex-

pense, and how rapidly do population and wealth increase! Real estate rises, rents rise, agricultural products increase in value, and all prosper.

Shut up the cotton-mills, and turn away the workers in iron, throughout England, and Great Britain, with all its immense wealth and power, would become bankrupt, and be at the mercy of not a few of the States of Europe, now greatly her inferiors. What advantage would she have over Belgium or Holland?

Real estate is of the greatest value, first, in and around large cities, and second, when it can look to commerce (in the popular sense of that term) to give it special value; and commerce can help real estate just so far as the mechanic arts enable her to find a market for the products of agricultural and mechanic labor.

Large cities grow up under the influence of the arts and commerce coöperating with each other; but as soon as the arts are neglected, commerce dies. Producers of fruit will not pay high prices for their own crops; hence they must look to these hives of mechanic and commercial industry for the most remunerative prices. Where population is sparse, as in agricultural districts, rents will be cheap. The reverse of this is equally true.

It is the mechanic arts which give special value to the mineral treasures of the world. But for these, what would be the worth of iron mines? How cheap, comparatively, would be the price of a coal bed! Families would pay more per ton or per chaldron for their yearly supply, for there would be far less competition, on account of the limited market, while the mining of a ton of coal would cost much more than it costs now. Such immense quantities are dug with existing facilities that miners can afford the very best machinery. Indeed, they can not afford to work their mines without taking advantage of the latest and best mechanical inventions adapted to such purposes.

Yet there are those who talk about "encouraging agriculture," as the "greatest of all interests," and suffering the mechanic arts to take care of themselves, forgetting that but for these thousands in every large community would be bankrupt within a year, and that every advancing step in the progress of mechanical skill adds a definite per centage to the value, real and marketable, of their own fertile acres and costly houses.

Our Southern friends are apt to talk sneeringly about "factory villages," and look contemptuously upon mere artisans, forgetting, that without these the property which they now estimate by tens of thousands could not command hundreds. The very existence of those communities, and their institutions, is now entirely dependent upon the sixteen hundred cotton mills of England. Were the market

created by the prosecution of the arts in that country alone, to be denied them, their entire property, till a substitute could be found, in the prosecution of the same arts elsewhere, would have but a nominal value. But for the arts, the city of New-York, now so proud and boastful, scarcely conscious of the existence of the tens of thousands of busy mechanics lining her extensive streets with their work-shops, and covering her wharves, and loading her cars and boats with the products of their industry, would present a view not more desirable, physically or morally, than is now seen at her own Five Points, where this or a kindred process has actually been carried out, and the immense estates scattered over the broad surface of the State would scarcely exceed in value the few acres of some more obscure farmer, who plants, cultivates, and gathers the whole of his scanty harvest with his own brawny arms.

Dispute about the propriety of encouraging the arts! As well question the importance of wholesome food or of pure air. Accumulate wealth without the help of the arts? Yes, when you can sit in your granaries and cotton-fields, and hammer out genuine metal directly from the vegetable growth. But till then indulge in no such idle fancies.

"Encourage agriculture?" Yes, to fill up your barns and storehouses, and *keep them full*, without any change or diminution from month to month; for there is no artisan to buy. All are producers; and you have no money with which, even if cloth were in the market, to clothe yourself or family. You are rich in lands and crops, and have much to spare; but your purse is lean, and you feel poorer than he who has but a few acres; for with your "abundance," it avails you nothing. So it is now in the distant West, in dark corners, and the result is that people are idle three days in the week, because they and their families do not need more than the three days' work will supply. So it was, within our recollection, in Ohio, and still more recently in Illinois.

How fortunate that you can use your own rye coffee, or prepare it from dandelions, and sweeten it with sugar of your own manufacture, so long as the implements required for such services, already prepared, are not passed using. For with the departure of the arts, with the decease of mechanical industry, commerce died. Seamen have all turned farmers; but they will die long before their land is paid for, and they can be buried only in a shroud, and that an old one! They will have no plate upon the rough box in which they are buried, nor any epitaph on their tombstone, for skill in such matters is only found in connection with the higher departments of art, which have perished long ago; and while you are conscious that you will live only in the memories of friends, you must console yourself by the reflection that

you lived in, and leave behind you, a country which devotes all her gifts and resources exclusively to THE ENCOURAGEMENT OF AGRICULTURE, "the first and greatest interest of the human family."

We will not stop now to discuss how these interests can be encouraged, nor that other and simpler inquiry whether here at home, or at a distance, in foreign nations;—whether it is better that the proprietor and his employees, the stock and the artist, the buyer and the seller, should live at convenient distances from each other, or whether it is safer and better that oceans should separate them. This would seem more suited to curious and ingenious school-boys, or some village lyceum accustomed to Pickwickian modes of treating men and things. If this question is still doubtful, let there be an end to the use of acoustic-tubes in our houses, and of telegraphic-wires, and other contrivances for annihilating space, and it might be desirable to publish widely some instructions upon the mode of conducting our commerce without expense, and yet so as to give quite satisfactory profits to ship-builders and ship-owners. We shall take occasion to refer to these points when our pages are not so well furnished as now. Meanwhile, ENCOURAGE AGRICULTURE BY CREATING A MARKET FOR HER PRODUCTS AT HER OWN DOOR, and we assure you that this is the one only possible way in which this great object can be secured. P.

IMPROVEMENTS IN THE STEAM ENGINE.

FORTY years ago the careless observer of the steam engine scouted the idea of its adaptability to many of its present uses, especially to locomotion; and they who, more zealous than politic, ventured to advocate its application to this use, met with such ridicule as the following, which the counsel of the opponents of the Liverpool and Manchester Railway deemed not inappropriate to utter before a committee of the House of Commons:

"It is, I presume, agreed on all hands, that this railway, worked by horse-power, would answer no useful purpose. But they tell you they are to have steam carriages—locomotives, as they are to call them—with which they are to do incredible things. Look at their prospectuses, their pamphlets, and all that they have put before the public on this wild scheme. Here is one of their pictures, with a long imaginative description, setting forth that it is to run at ten, twelve, or even fifteen miles per hour. Of course they make no such pretense before this committee; quite otherwise. Mr. Rostrick tells you that he *believes* they will go eight or ten miles an hour. Mr. Stevenson thinks they will go six, and is confident that they will go four miles an hour with considerable loads. Very moderate, indeed, compared with the extravagant pretensions made where they are less likely to be scrutinized with intelligence; but still, as I think, much more than they will realize, if this visionary scheme is sanctioned, and actually carried out. Sir, I know something of the county in which this

alleged improvement is to be attempted, and with no disrespect to it, I must say that it has a full share of rainy weather, when, from the slipperiness of the rails, it will be impossible for these vehicles to go at all; and all traffic, of course, must be suspended in wet weather, or carried on by horse-power. But even in dry weather, I question whether they will go at two and a half miles per hour—the common speed of a draft horse. But they must make some pretense other than that any known means under heaven can make their rails useful; so they set up this hobby of phampleteers and picture-makers, and trust to the chapter of accidents to turn up something else, if this fails them, when actually tried. Four miles an hour! that is one thing, not yet proved, however. But another story has been told to the deluded subscribers. They were to gallop from Liverpool to Manchester at a speed which the mail-coaches have attempted, but failed to accomplish; and it is for this committee to say whether they shall be swindled out of their money on such impudent pretences, and whether Parliament shall disgrace itself by sanctioning a scheme so wild, wasteful, absurd, and reckless, for the sake of filling the pockets of engineers and a multitude of other leeches, who will get *their* pay so long as they condescend to work, whatever may be the losses of those who furnish means to pay them."

At this time (1825) the actual condition of locomotives was such as to embolden even intelligent men to talk in this strain. It may be supposed, then, that there must have been vast improvements before trains would run at seventy-eight miles per hour. We propose to notice a few points in this series of the results of intellectual labor, without which, more hard work and capital would have been expended in doubtful competition with horse-power.

Some years after the firm establishment of the locomotive on the Liverpool railway, engineers finding, or at least concluding, that their engines did less than a twelfth as much work as the Cornish engines, with the same amount of fuel, set about making a theory to account for the deficiency. Among the causes of inefficiency, they supposed that, as the piston was driven faster than the rules allowed, it ran away from the steam, so that the pressure upon it was less than it was in the boiler; and to remedy this, they thought it advisable to give the steam more time to get in. They therefore set the eccentric in advance of the old position, which had the effect to open the steam-way before the end of the stroke. The engines worked better on a level, and with light loads; but in cases where they went slowly they did not work so well. They were, however, all altered in this way—the advantage of increased speed and economy on a level being more than an equivalent for the loss on ascents.

The steam being admitted when the piston had yet a twentieth of its stroke to perform, resisted its action for the remainder of its stroke, which evidently was a cause of loss. But experience decidedly proved that the timely opening and wide opening of the steam-port enabled the steam to get into its place, ready for efficient action, at the very beginning of the new stroke. That had all been settled by *practical trial*, and was not to be given up for theoretical considerations; and so they went on for some years, giving "a lead to the slide," as they technically termed the valve. At last, however, it occurred to some one that the steam might have difficulty in getting out, as well as in getting in; in which case there would be back pressure. This idea at once found favor, and, to test it, they made new valves for an engine, so long, that when set with the

usual lead they should not admit the steam until the beginning of the stroke. The effect was decisive. There was a much better action, not only when running slowly, but at high speeds; and it was evident that the timely opening for the release of steam had been the sole cause of the improvement. This was followed by further lengthening of the valves, until they overlapped the ports a full inch, and a corresponding increase of lead; so that the exhaust port was an inch open at the end of the stroke. Thus the steam, which required a certain *time* to flow out, and reduce itself to atmospheric pressure, was allowed the time in which the piston traveled slowly, and therefore did little work, and caused but a corresponding consumption of steam. By this arrangement, the total back pressure was reduced, and the saving thus effected more than compensated for the loss occasioned by releasing the steam before it had exerted all the force of which it was capable. The saving from this head-work is shown by the following table, from Wood's Treatise on Locomotives:

GROSS AVERAGE OF COKE PER MILE.

46 lbs. Old valve, 1–16 lap. 1839.
40 lbs. Old valve, after an amount of fuel was kept with engineers. 1839.
36 lbs. Valves with $\frac{3}{8}$ lap.
32 lbs. Valves with $\frac{1}{2}$ lap.
28 lbs. Valves with 1 inch lap.
22 lbs. 1 inch lap, with increased care in firing.
15 lbs. 1 inch lap, new engines, with larger exhaust ports, longer tubes, closer fire-box, and better construction.

From this table it appears that the increase of the length of the valve alone, reduced the consumption from 40 to 28 lbs., saving 30 per cent. of the fuel. Improvement in the *motion* of the valve, adopted at a later period, effected a further reduction.

We shall, at a future time, discuss these improvements, by which the rate of expansion was varied to suit the variable resistance. P.

MECHANICAL CURIOSITY.—With a great deal of wonder, says the editor of the New-Haven *Patriot*, we the other day saw at the store of Mr. Cannon a couple of bottles, each of which would not hold over a quart, and in one of which was a saw mill in operation, and in the other a flour mill also in operation. Both mills were moved by a crank in the neck of each bottle. The bottles and machinery are in the possession of Mr. A. H. Parkingham, who is now in the employ of Mr. Cannon. Mr. Parkingham says the machinery was built within their covering thirty-five years ago by a person who was then a resident of New-York, but now deceased. He did it on a wager of $5,000, which he won in less than three years, the time allowed for the work. It has been suggested that the glass must have been blown over the machinery, but it is also said it was impossible with such kind of bottles. They are filled full of machinery, which is braced and otherwise made strong. The neck of each bottle is filled with a plug which is keyed close to the neck. The mystery of getting in the key, when there is hardly room to get in a tool as big as a shingle nail, is as great as any other mystery about the ingenious affair.

Junior Editor's Table.

NEW-YORK AS IT IS.—It is full of strangers, while many of her own citizens are still in the country, and trying to be comfortable, occasionally, over the fire. The streets are crowded, places of amusement are overflowing, and *unable to seat all* their visitors, and nothing is empty but the churches. At the ACADEMY OF MUSIC, Mr. Maretzek, with a good company, and the superb Mad. Lagrange for *prima donna*, is very successful, both artistically and financially, and Mr. Hacket on the odd nights plays Falstaff and a few other characters with his well-known ability, to respectable houses. Down town, the RAVELS have had a grand season. The wonderful feats of their own Hengler, the only one, so far as we know, who can rival the skill of the *Ravels proper* have drawn crowded houses every night of their performance, while the burlesque "opera-houses," and minstrels of various degrees of merit, have no occasion to complain of want of patronage.

The yellow fever has been doing an immense business, in the way of producing panics in the country and at a distance, but, like some "great men" that we have heard about, is scarcely thought of here "at home." The city was seldom, if ever, more healthy at the same season of the year. Doctors have disputed upon the point "infectious" or "contagious," with as much interest as ever Melville inquired in his travels among barbarians, "Happar or Typee." We believe the end of the debate, whatever is true of the fever, is not yet. It is, however, a question of very grave practical importance, and can be settled only by a large amount of incontestible facts carefully noted and collated.

THE CITY is wonderfully enlarging herself. An uncounted number of dwelling-houses are going up, filling entire blocks, and taking possession of the waste lands all around Murray Hill, the Crystal Palace, and beyond. Fires, too, have lent their help in opening grounds for finer structures, though we could have desired the longer continuance of the Latting Tower, as an observatory, the center of a grand panoramic view But its destruction afforded a sight seldom witnessed, as, in the dead of night, we saw its flames ascending some twenty or thirty feet above its summit, the height of which measured about three hundred feet from the ground, which was one of the highest points of land in the city.

THE SEASON OF FAIRS is now in progress. It is often a good test-fact, in respect to any event, or act, or series of acts, that both their direct and incidental influence is good. The aim of a farmer's Fair is to improve, by the offer of rewards, cattle and crops. This end, in a good measure, is secured. But we believe a still higher good is of a social and moral kind. Farmers and artists of various sorts and kinds come together and enlarge their horizon of thought and sympathy, and, while looking upon the objects, animate and inanimate, there collected, embryo thoughts nestle within their minds, and, by-and-by, are almost unconsciously conned over, and become parts of a system or a nucleus of a theory, or a key that unlocks some mystery, or, better still, are the basis of

improved practice. Conversation at home, or among neighbors, is improved, just as a fire grows hotter by the accumulation of fuel. Better culture, larger fields, and a substantially higher form of life may be the later fruits that shall be gathered. To give increased efficiency to these fairs, we must secure the observance of these seasons as GENERAL *holidays*. If the 4th of July or New Year should occur at the same time only in a single township, and if its observation was confined to the inhabitants of these small territories, while the number of public days would be increased, the effects produced by them would be comparatively small. It is the social relations of these days that give them value either for the old or the young. It is when the people of a county or a state assemble, that our thoroughfares are thronged, and our stereotyped habits of domestic quiet are uprooted; and it is then only, as a general rule, that any single locality is deeply excited. But the whole community is improved by these occasional days. A plant in our parlors, whose roots, confined within a small ball of earth, are netted together and bound fast, are apt to decay. Pull it up and shake off the hardened soil, and give more room for growth and fresh earth, and how quick the new shoots will put forth. So it is in social life, if the culture is judicious, though in both cases alike, if the movement is guided by ignorance and recklessness, death is certain.

THE FAIR OF THE AMERICAN INSTITUTE, while we are writing, is preparing for a great show. We trust they will be successful.

OZONE.—In the scientific world, much attention has been given to the question, What is the matter properly designated by this term, and what is its effect on animal and vegetable life? 1st. What it is. This has been answered by M. Scoutetten, that it is oxygen in a peculiar condition, as by the electrization of the oxygen secreted by plants, or of that which escapes from water, or of that disengaged in chemical changes; or 4th, by electric phenomena acting on the oxygen of the atmosphere. He asserts further, that plants and water furnish it to the atmosphere, ordinarily, during the day, but not in the night. He supposes that "nascent oxygen" is ozone, and that it can perform combinations impossible with pure oxygen. "Nascent oxygen" is oxygen at the moment of escaping from some combination, as in plants, animals, water, etc. It is found that such oxygen, or oxygen under such circumstances, has a peculiar tendency to enter into fresh combinations. 2d. This atmospheric ozone is regarded by M. Wolfe, of Berne, as the cause of disease; and various experiments tend to show a constant relation between ozone and sundry epidemics. Observations conducted by our own Prof. Rogers, also tend to show that ozone is found in connection with W. & N. W. winds, but not in those from the opposite quarters, and the quantity of ozone was always the greatest when the wind changed suddenly to these quarters. Further observations are necessary before any theory in relation to the influence of ozone can be considered as established.

HELP YOURSELF.—It is related of Girard, that when a young tradesman, having bought and paid for a bag of coffee, proceeded to wheel it home himself, the shrewd old merchant immediately offered to trust his new customer to as many bags as the latter might desire. The trait of character revealed by the young man in being his own porter, had given the millionaire confidence in him at once. His reputation was made with Girard. He became a favored dealer with the enterprising merchant, throve rapidly, and in the end made a fortune.

Recent American Patents.

SELECTED AND PREPARED BY M. P. P.

Contrivance to Prevent Liquids Boiling Over. By John Leiblong, of Waterbury, Conn., (assigned to Edward Baown and J. R. Case.—This invention consists in placing, within the upper part of the vessel, a conical shaped cap, having an opening at its apex. When the boiling liquid passes up through the opening in the apex of the cap, it strikes against a deflecting plate, and runs down again into the vessel.

Safety Gas Burner. By Augustus R. Marshall, of Stratford, Conn.—This consists in a safety attachment, whereby, whenever the gas is blown out accidentally by a current of air, or otherwise, its escape will be immediately arrested. This result is effected by arranging a valve in connection with an air-chamber, so placed that it is expanded by heat, and the valve kept open. When the flame is extinguished, the chamber contracts, and closes the valve, and thus the gas is shut off.

New Link-Motion.—A new modification of the link has just been brought out by a Scotch engineer, consisting in a combination of the shifting and the suspended link. The link proper is a straight bar; it is sustained in the usual way, by suspension from the reversing shaft. The radius link is likewise suspended from the reversing shaft, the sustaining arm being opposite that which sustains the link proper; from which disposition, it is obvious, the one is raised in proportion as the other is lowered; and the one partially balances the other. It is claimed that, by a proper proportion, the cut-off points may be adjusted as truly as in the suspended link-motion: and that it is easier and cheaper of construction, and occupies less room than either.—*R. R. Advocate.*

New Axle Box.—D. R. Perkinpine has recently secured a patent for an axle box of novel construction for outside bearing. The novelty consists in the ready removal of the outside end and bottom, all of which is cast in one piece, separate from the other portions of the box, and also in the ready removal of the oil cellar, which is another separate casting. This leaves the entire bottom and end of the journal exposed. The object is to clean and fill the oil cellar and examine the journal with greater ease than is possible with the ordinary box, of which the end only is removeable. Two grooves are cast in the bottom of the main casting of the box, parallel with the axle, and into these grooves slides a shelf cast with the front. The moveable part is confined to the main casting by two set screws, such as are ordinarily used to screw the plate to the ordinary lightner box. We do not see any great utility in getting at the journal any more readily, particularly when the arrangement weighs more than the ordinary box. The removal of the oil cellar of driving boxes and all *inside* boxes, which, of course, can not be examined in any other way, is a good idea. Mr. Quigley's box, described in the *Advocate* of last week, accomplishes this

object partially. The oil cellars of Mason's driving boxes may be entirely removed without removing the jaw brace.—*R. R. Advocate.*

Improved Vise. By R. W. Thickens, of Brashter Iron Works, St. Lawrence Co., N. Y.—Consists, first, in a peculiar means of sustaining the moveable jaw in a vertical position, so that it may be moved back and forth, parallel with the stationary jaw. Second, in the employment of a nut composed of two parts, so arranged and operated that the nut may be connected and disconnected from the screw of the vise at will. This enables the operator to push the jaws together against any article, and then secure it with the screw in much less time than can be done by the common vise.

Comparative Elasticity of Wrought and Cast Iron.—The mean ultimate resistance of wrought iron to a force of compression, as useful in practice, is 12 tons per square inch, while the crushing weight of cast iron is 49 tons per square inch; but for a considerable range, under equal weights, the cast iron is twice as elastic, or compresses twice as much as the wrought iron.

A remarkable illustration of the effect of intense strain on cast iron was witnessed by the author, at the works of Messrs. Easton & Amos. The subject of the experiment was a cast iron cylinder, 10⅝ inches thick, and 14½ inches high; the external diameter being 18 inches.

It was requisite, for a specific purpose, to reduce the internal diameter to 3½ inches, and this was effected by the insertion of a smaller cast iron cylinder into the center of the large one; and to insure some initial strain, the large cylinder was expanded by heating it, and the internal cylinder being first turned too large, was thus powerfully compressed.

The inner cylinder was partly filled with pewter, and a steel piston being fitted to the bore, a pressure of 972 tons was put on the steel piston. The steel was "upset" by the pressure, and the internal diameter of the small cylinder was increased by full three-sixteenths of an inch; that is, the diameter became 3 11-16ths of an inch! A new piston was accordingly adapted to these dimensions; and in this state the cylinder continues to be used, and to resist the pressure; the external layer of the inner cylinder was thus permanently extended 8 1-50ths of its length. In fact, it can only be regarded as loose packing, giving no additional strength to the cylinder.

Under these high pressures, when confined mechanically, cast iron, as well as other metals, appears, like liquids, to exert an equal pressure in every direction in which its motion is opposed.—*Clark's Britannia and Conway Tubular Bridges.*

Pressure Tea Bell. By Jason Barton, of Middle Haddam, Conn.—Ornamental tea bells of the gong shape, operated by pushing down a button, are extensively sold. In these the hammer is connected with a spring and escapement. In the present improvement, which is of the same form and class, the button is attached to one end of a lever within the bell and the hammer to the other; the fulcrum of the lever is placed quite near to the point where the button connects, so that the opposite or hammer end of the lever, when the button is pressed, will have a larger sweep than the other end, and strike the bell. The improvement cheapens this kind of bell considerably, and renders it more durable, as the spring and escapement are wholly dispensed with.

IMPROVED FIRE ARMS.—By Gilbert Smith, of Buttermilk Falls, N. Y.—This invention is applicable to fire-arms having either the sliding or the hinged breech, and to almost any that have the breech movable separately from the chamber, which are loaded at the rear of the chamber. It consists in forming a groove around the chamber near the extreme rear thereof, to produce a lip from the solid metal of the rear of the chamber, of sufficient thinness and flexibility to be driven back against the breech by the force of the explosion of the charge, and thereby to prevent any escape of gas, and consequent loss of the force of the explosion.

GOLD WASHER AND AMALGAMATOR.—By W. S. Pierce, North Attleborough, Mass.—This apparatus consists of a large box, in which a furnace for producing the heat is placed. The top of the box is beveled, and covered with an inclined plane or bed, over which the crushed quartz or gold bearing dust, mixed with water, is caused to flow. Ledges or pockets containing mercury are placed across the bed so as to intercept the gold. The fire below heats the mercury, and the precious metal is thus absorbed. At the lower end of the inclined bed is a fine screen, through which the finer particles of gold that may have escaped the mercury, fall, and are received on a sponge.

IMPROVED ODOMETER.—By Smith Bears, of Naugatuck, Conn.—This instrument indicates the distance traveled by carriages. It consists of a combination of small cog wheels and indexes placed in a box and fastened to some convenient part of the vehicle. An elastic connection between the instrument and one of the wheels of the carriage is so arranged that at each revolution of said wheel one of the cog wheels of the apparatus will be moved, and a change of position be thus imparted to all the others.

THE MERCHANT'S CLERK AND THE PLOUGH-BOY.—The young man who leaves the farm-field for the merchant's desk, or the lawyer's or doctor's office, thinking to dignify or ennoble his toil, makes a sad mistake. He passes by that step from independence to vassalage. He barters a natural for an artificial pursuit; and he must be the slave of the caprice of customers, and the chicane of trade, either to support himself or to acquire fortune. The more artificial a man's pursuit, the more debasing is it, morally and physically. To test it, contrast the merchant's clerk with the plough-boy. The former may have the most exterior polish; but the latter, under his rough outside, possesses the true stamina. He is the freer, franker, happier, and nobler man. Would that young men might judge of the dignity of labor by its usefulness and manliness, rather than by the superficial glosses it wears. Therefore, we never see a man's nobility in his k'd gloves and toilet adornments, but in that sinewy arm, whose outlines, browned by the sun, betoken a hardy, honest toil, under whose farmer's or mechanic's vest a kingliest heart may beat.—*Hunt's Merchants' Magazine.*

Recent English Patents.

SELECTED AND PREPARED BY M. P. P.

AN IMPROVEMENT IN THE MANUFACTURE OF BRUSHES. By GEORGE CONNER, Liverpool.—This invention consists in the use of a vegetable fibre obtained from the plant called Mexican grass—*Agave Americana*—in the manufacture of brushes; the object being to obtain a cheap and efficient substitute for bristles, or for certain vegetable fibres that are now used in the manufacture of brushes or brooms.

To remove extraneous matters from the useful fibre, the patentee cuts the plant into pieces of the required length, and, after loosening the fibres by rolling, crushing, or other convenient means, dresses them, by means of a comb, in the ordinary manner of dressing other vegetable fibres or bristles. By this means, all the short waste is removed, and the fibres are then baked in an oven, to straighten them: they may then, if required, be dyed of any suitable color, by immersion in any suitable dye liquor. When dry, the fibres are submitted to the operation of heckles, in the manner pursued in treating horse-hair; and the result will be a strong, firm, and stiff horny fibre, somewhat resembling coarse horse-hair. This strong, horny, vegetable fibre may then, according to its quality, be used in the manufacture of brushes of various kinds, and may be employed either alone or mixed with other fibres.

IMPROVEMENTS IN APPARATUS FOR ASCERTAINING THE PRESSURE OF STEAM, AIR, WATER, OR OTHER FLUID. By FREDERIC K. LUDEWIG HAHN DANCHELL, near Islington.

In this invention, for ascertaining the pressure of steam and fluids, instead of admitting the entire pressure of steam, air, water, or fluids or liquids to act directly upon the indicating instrument, for the purpose of showing the amount of the pressure, a part of such pressure is only admitted to act directly or indirectly upon the indicating instrument. Instead, therefore, of a column of thirty inches of mercury for every fifteen pounds of pressure, which renders the ordinary mercurial guages of equal division impracticable for high-pressure purposes, such a column of mercury only is obtained as will correspond with that portion of pressure which is admitted and made available; and this permits of the scale of the mercurial guage being reduced to any lengths most convenient to indicate any amount of pressure. The quantity of steam, air, or fluid which is to act on the indicating instrument, is limited by reducing the passage which admits the supply of the fluid, the pressure of which is to be measured by the indicator; and the instrument is regulated by allowing one part of the fluid, thus reduced, to escape into the atmosphere, while the other acts upon the guage.

We suggest to those skilled in the practical application or working of such machinery, whether some good use may not be made of this invention, with some slight modification, for affording greater security to passengers and crews in our steam navy, both foreign and coastwise.

Suppose that while half the pressure of the steam acts upon the safety-valve, the other half should "escape into the atmosphere," through a whistle. The valves are not opened till the steam is heated to a given pressure. When this legal or safe point is exceeded, not only is a valve opened, or an escape of sur-

plus steam permitted, but all on board are apprized of the fact by a shrill whistle, so placed as to be out of the control of the engineer or captain; and the higher the steam is raised, the louder is the fact made known through this senseless organ. Confidence may not always be placed safely upon men, even though *respectably* honest. But this signal, while in order, is beyond control, and cannot perjure itself. While it is silent, passengers may feel assured of their safety, so far as this security is concerned; and if warned of danger—having knowledge of the fact, and not being obliged to rely on others' opinions—application at the right quarter would, no doubt, meet with success, and the cause of their alarm, for the time, at least, be removed. Or even a series of such tell-tales might be arranged, each having its own musical tone, and by a constant report, make known the precise condition of the steam.

Improvements in Wrought Iron Shafts for Steamboats, etc. By Geo. Tomlinson Bousfield, of Sussex Place, Brixton.

The usual practice, in constructing wrought-iron shafting, has been to weld and forge it in one piece, while the difficulties in getting sound shafts by such means of manufacture greatly increase as the diameters of the shaft increase. This invention consists in constructing each shaft of several pieces, which are not welded together, but are caused to retain the form of a shaft by being fitted together and bound by strong hoops or rings of wrought iron. For this purpose, a central bar is used, of comparatively small diameter as compared with the intended diameter of the shaft—having around it several sectional pieces which make up the diameter desired. The shaft is constructed of such a number of separate pieces of wrought iron as will make each piece from its size best adapted for the process of hammering, so as to be thereby the most strengthened, and rendered free from defects. Six or eight pieces work well. Each piece is forged and hammered separately, and planed into the required shape; each piece is also tongued and grooved longitudinally, for the purpose of interlocking the pieces together lengthwise; cross grooves are also cut in the adjacent faces of the several pieces, for the insertion of steel keys, to prevent any movement of the pieces among themselves lengthwise of the shaft. The pieces are fitted together with their longitudinal tongues and grooves, and lateral keys, and then bound with large wrought-iron collars, which are to be fitted on hot, and shrunk by cooling. The large hubs or centre pieces, which carry the paddle-wheel arms, are also fitted and shrunk on in the same way, and serve as powerful collars to bind together the shaft. These collars and hubs may be fitted on over the ends of the lateral keys, or some of them, to prevent their starting out; the large crank is also fitted on hot, and shrunk by cooling, so as to make that serve as a collar to bind the shaft.

Improvements in Apparatus for Extinguishing Fires, and for other purposes. By Thos. Taylor, of Manchester.

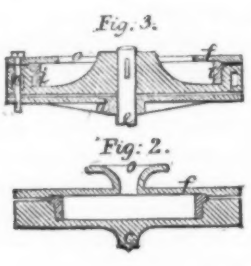
This invention relates, firstly, to the apparatus through which water is discharged for the purpose of extinguishing fires, and consists in the adaptation of fixed blades, vanes, or similar parts, in front of the orifice thereof, by which means the fluid becomes divided, and is caused to cover a greater area of the ignited surface. Secondly, to apparatus for extinguishing fires, and also to ornamental fountains, and other apparatus by which it may be desired to cause a spreading of the fluid, and consists in the adaptation thereto of revolving blades or vanes, which receive motion from the pressure of the fluid as it passes onward to be discharged.

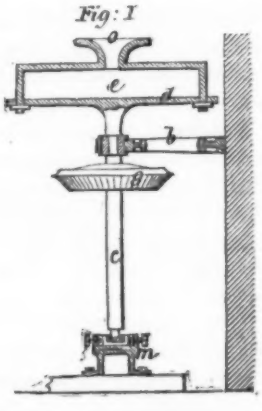
Improvement in Machines for Threshing and Winnowing. By Oliver Maggs, of Dorset.—This invention is as follows:

In constructing the winnowing apparatus of a thrashing machine, and also of a winnowing machine, two riddles or sieves are in each case employed, one

above the other; but, in place of allowing the grain to fall from the upper sieve or riddle directly on to the lower one, an inclined partition is employed, on to which the grain from the upper sieve or riddle falls, and by it the grain is conducted to the end of the lower riddle or sieve, and streams of air from a blowing machine are directed over and between the riddles or sieves, as heretofore. It is preferred to use two sets of such riddles or sieves and partitions in a thrashing machine. And in constructing the shaker of a thrashing machine with rotatory rakes, in place of having all the rotatory rakes of the same diameter, some are made of larger diameter than the others. The larger rakes are placed either alternately with the rakes of smaller diameter, or there may be more than one of the smaller rakes between two of the larger rakes. Below the rotatory rakes there is an incline, down which the grain which is shaken out descends to to the lower winnowing apparatus, as heretofore.

Improvement in Casting Metals. By John Henry Johnson, of Lincoln's-inn-fields.





This invention relates to certain peculiar constructions and arrangements of machinery or apparatus for casting wheel tyres and rims, either toothed or plain, hoops, bands, drums, and all other articles of an annular form, by the aid of centrifugal force, whereby the central core, hitherto employed for casting such articles, is dispensed with, and the work is effected with accuracy and economy.

In the engraving, fig. 1 represents a vertical sectional elevation of one arrangement of centrifugal moulding apparatus for casting wheel tyres, rims, or other hoops or rings, of any diameter and thickness.

c is a vertical shaft, which receives rotary motion through a bevil-wheel *g*, keyed thereon. This shaft is supported near its upper end by a bearing in the bracket *b*, and works at its lower end in an adjustable footstep bearing *m*. On the upper end of the shaft *c*, is fitted the circular mould or chill *e*, which is keyed to the disc *d*, formed on the end of the shaft. A funnel-mouth *o*, is formed in the centre of the mould, into which the moulten metal is poured. The rapid rotary motion which is imparted to the mould by the driving-shaft and bevil gearing, causes the metal to fly off by centrifugal force from the centre of the mould to the periphery, and there form a ring of perfectly even thickness all round, and of an external contour corresponding to the shape of the periphery of the mould.

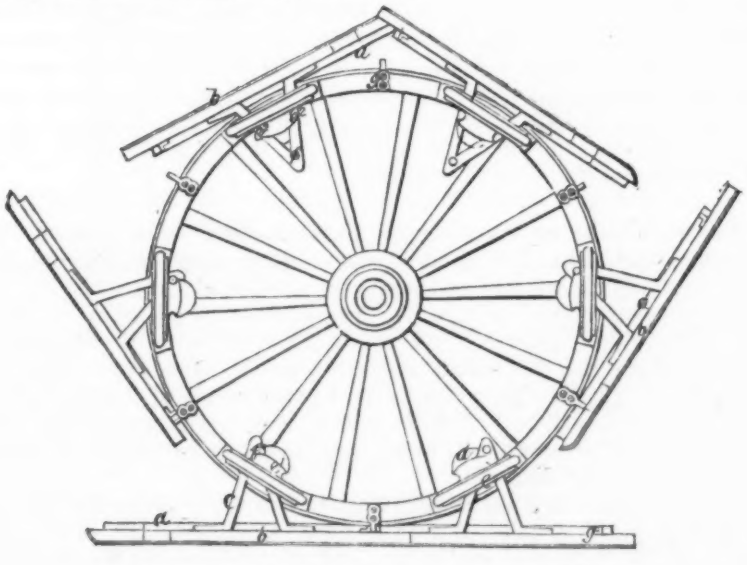
In the arrangement shown at fig. 1, the mould is intended to produce a plain ring, suitable for the rim of a wheel, or other suitable purpose. Fig. 2 represents an arrangement of mould for casting wheel tyres; it is of a somewhat similar construction to fig 1, with this exception, that the top plate or cover *f*, is bolted on to the bottom of the mould, which is shaped so as to produce the flange of the tyre.

In fig. 3, the mould is rotated by bevil gearing, as in fig. 1, and rests upon and is bolted at *n*, to a disc *d*, on the end of the vertical shaft *c*. An internal

boss is made in the centre of the mould, through which boss and the end of the shaft a key is driven to connect them together. The sides of the boss are curved or sloped all round from the top outwards, so as to cause the molten metal which is poured in at *o*, *o*, to run more freely towards the periphery, which is so shaped as to form a wheel tyre. The ring or annular cover *f*, is bolted on to the mould by the bolts *n*, *n*, in order to prevent the metal from flying out during the rapid rotation of the mould. By suitably shaping and indenting the periphery of the mould, the rims of external toothed gearing of all kinds may be cast with facility; or by having the internal periphery plain, and pouring in a suitable amount of metal, thin circles or hoops of cast steel may be formed, suitable for ribbon saws or springs.

From the above description, it will be obvious that annular articles of all kinds may be cast of any metal without the necessity of making separate moulds and using internal cores; and the rings so cast may afterwards, if found requisite, be submitted to a rolling mill or forge hammer, for the purpose of further working the same, and reducing them to the desired size and form. By afterwards cutting the rings so formed, they may be rolled out straight into lengths or bars, which may be used for any suitable purpose.

PORTABLE RAILWAYS, OR APPARATUS APPLIED TO CARRIAGES TO FACILITATE THE DRAFT. By JAMES BOYDELL, Regent's Park.



This invention is applied to the wheels of carriages or heavy wagons. etc., and consists in the application of moveable detached parts of a railway to the wheels of carriages, whereby each part is successively placed by its wheel on to the road or land over which the carriage travels,—each part of the portable railway, when down, allowing its wheel to roll over it; the wheel depositing and lifting the parts of the railway in succession; and the present improvements consist in the application of side pieces to each portion of the moveable rails, so as to obtain a more extended bearing for the rails whilst the wheel is passing over it; and the invention also consists in the construction of the parts of the portable rails by combining trough iron and wood, to obtain great strength with lightness.

The Figure in Plate III. shows, in side view, a wheel with the improved apparatus applied thereto. The parts of the rails on which the wheels of a carriage run, are each fixed to a plate, by preference of wood strengthened with iron, so that the surface bearing of the plate is considerable, as compared with the width of the tyre of the wheel—the plate extending considerably on either side of the rail on which the wheels run. The ends of the bearing plates are

formed so as to match into each other, and in each case to extend beyond the end of the portion of rail which a bearing plate carries; so that when a carriage wheel comes to the end of one portion of rail, it does not come to the end of the bearing plate on which that part of the rail is fixed, but is received on to and is supported by the next portion of rail, before the wheel has passed beyond the end of the previous bearing plate. In the drawing, there are shown to be six portions of a rail to each wheel; and each portion of the rail *a*, is fixed to the bearing plate *b*; and, for lightness, with strength and stiffness, it is preferred to use light troughs rails of iron, filled with wood, and fixed by rivets or otherwise to the bearing plate *b*. To each of the bearing plates *b*, is affixed or formed the triangle *c*, which passes between the two guide plates *d*, *e*, fixed to the side of the wheel—one such pair of guide plates *d*, *e*, being used for each bearing plate *b*. These triangles have each a projecting stud or pin *f*, through them, and the guide plates *e*, fixed to the wheel, have each a raised surface e^1, with hollows or notches at the ends, at e^2, by means of which, together with the stops *g*, the bearing plates *b*, are correctly laid on to the ground; and this is effected by the pin or stud *f*, entering the forward notch e^2, of the guide plates, whilst the back end of the bearing plate which is about to be laid down, is correctly gauged by one of the stops *g*. Similar stops may be applied in the opposite position, to assist in backing the wheel, and the bearing plates will be taken up or lifted correctly by the studs *f*, coming into the back notch e^2, of the guide plates *d*, *e*,—the other end of the bearing plates coming against the stops *g*, as they are lifted up. By this construction and mode of combination, the parts of a portable railway will at all times be laid and taken up correctly, notwithstanding the bearing plates are detached and independent of each other. The patentee remarks that the invention is applicable to all classes of carriages with wheels, whether moved by animals or by steam, or by other power. He claims the combination herein described.

An Improved Mode of extracting Metals from their Ores. By John Forrest, of Dears Place, Somers Town.—In carrying out this object, the ore is reduced to small pieces, and immersed for a short time in a hot alkaline bath, in order that it may absorb within its pores or fissures a portion of the alkaline solution. The broken pieces of ore, when saturated with the alkaline solution, are removed from the bath, and subjected to the action of a white heat in a muffle retort, or other suitably constructed furnace. While under this heat the alkali will become fused, and, forming a flux, it will greatly facilitate the fusion of the metallic matters contained in the ore, and the separation of the precious metals from their combinations.

Another and most important part which this flux plays in the operation is to cause the small particles of gold or silver to agglomerate in large beads on the surface of the broken pieces of ore, and thus to prevent the loss of the precious metals by sublimation.

The ore having been subjected to a white heat sufficiently long to reduce the gold to a pure metallic state (which will in general take place in about fifteen minutes, more or less, according to the quantity of ore under treatment,) is discharged from the muffle or furnace into cold water, whereby the ore is rendered very fragile, and capable of being readily crushed and reduced to powder. The precious metals may then be separated by any of the ordinary washing or amalgamating processes.

The composition of the alkaline bath may vary, but the following is found cheap and efficient:—(1), American potash; two pounds dissolved in water sufficient to cover the broken ore to be operated upon; or in lieu thereof, (2), common soda, six pounds dissolved in the like quantity of water before indicated; or, lastly, (3), a mixture of one pound of American potash with three pounds of common soda dissolved in water, as above indicated.

When operating upon gold or silver bearing ores which contain in large quantity either iron, copper, or arsenic, the process is somewhat modified; that is, instead of immersing the ore in a hot alkaline bath, the broken ore is placed in the furnace, and a dry flux is strewn over or mixed with it. The

temperature of the furnace is then raised to a white heat, and the precious metal is extracted in a pure state from the ore. By continuing this heat, the pure metal (if the ore under operation is very rich) may be run into a mass, thus rendering the crushing, washing, or amalgamating process unnecessary. When the fusing operation is arrested at the stage at which the ore is discharged into water, the gold or silver will be found in the form of beads of various sizes studding the surface of the ore, which is covered with a glaze, that insures the adhesion of the gold or silver beads to the ore, and which glaze prevents (as above mentioned) the sublimation of the precious metals. The dry flux employed (the quantity of ore under operation being, say, half a ton) is a mixture of nitrate of potash one pound, carbonate or borate of soda one pound, and common soda eight pounds.

The patentee claims, "The glazing of gold and silver bearing ores as herein described, for the purpose of preventing the loss of the gold and silver by sublimation, when exposed to furnace heat."

New Glass.—In making common transparent glass, potash and soda are generally employed as fluxes for the silica, but L. I. F. Margueritte, of Paris, has obtained a patent for dispensing with these in making transparent glass, by the use of silica, lime and albumen alone. By calcining a mixture of silica 65·47 parts, lime 25·80, and albumen 8·73 parts, a perfectly transparent glass can be manufactured.

New Method of Manufacturing Iron and Steel. By M. Bessemer.—English journals, recently received, contain a very long but very satisfactory account of a new process, as above described, which promises to be of immense importance. At present we have room only for general statements.

The ore is now placed in the smelting or blast furnace, and run into short pieces called *pigs*, and these pigs are afterwards transferred to a second, the fining furnace, and again to a third or puddling furnace, where it is exposed to an immense heat, till it is in a proper condition to be rolled into balls or "blooms." It is then put under a tilting hammer, and through a pair of squeezers, or taken to a steam forge, and thus, at very great expense, is converted into malleable iron.

M. Bessemer's new method is as follows:—The melted ore is run out from the smelting furnace into a "converting vessel," where it is exposed to streams of *cold air*. Pig iron contains carbon, sulphur, phosphorus, silicium, and other impurities, from which it must be freed. The oxygen of this cold air, forced through the liquid mass, unites with the carbon in the melted pigs, and thus produces a very powerful combustion, which consumes a portion of these impurities, and causes other portions to rise to the surface, as a scum. The whole mass, coming successively into contact with these streams of air, is also completely liquified and made homogeneous in texture, composition, quality, etc., and it can be drawn off and made into masses of any size. The "boil" will continue till the carbon is consumed. The moment this terminates, the mass must be run out, or, by contact with the cold air, it will harden with great rapidity.

The old process was very expensive, not only from the immense consumption of fuel, but from the necessary waste of the metal. The gain of the new process is immense. Steel now worth £50 or £60 per ton may be produced for less than £10. In the manufacture of malleable iron the gain is nearly as great. We shall refer to this again, hereafter.

Miscellaneous.

NEW-JERSEY MARL AGAIN.

"Mr. Woolley manured a piece of land in the proportion of two hundred loads of good stable manure to the acre, applying upon an adjacent tract of the same soil his marl, in the ratio of about twenty loads per acre. The crops, which were timothy and clover, were much heavier upon the section which had received the marl; and there was this additional fact greatly in favor of the fossil manure over the putrescent one, that the soil was also entirely *free from weeds*, while the stable manure had rendered its own crop very foul.

"There can be no doubt that twenty loads of marl per acre must be regarded as an unnecessarily bountiful dressing, but computing the relative cost of the two manures when employed in the ratio above stated, we find a considerable disparity in favor of the Green Land. Placing the home value of farm-yard manure at one hundred cents for each two horse-loads, and the value of the marl at twenty-five cents per load, we have the expense of manuring one acre *two hundred dollars*, and of marling the same *five dollars*. This being an *experiment*, an extravagantly large dressing of manure was employed, but not exceeding the usual average application more than the twenty loads of marl surpassed what was necessary.

"Experience has already shown that land, once amply marled, retains its fertility with little diminution, for at least ten or twelve years, if care be had not to crop too severely; while, with all practicable precautions, the stable-manure must be renewed at least three times in that interval, to maintain in the soil a corresponding degree of vigor."

We have copied the above from the Geological report of Prof. H. D. Rogers on the State of New-Jersey, for 1836. In connection with other facts, well known to ourselves, it satisfies us of the very great value of these Green Sand Marls. Where they can be had for 25 cents a load, or even for ten times that price, farmers are beside themselves if they do not use them. Still there is a limit to their value. Prof. Rogers is, beyond all question, a good geologist. The agricultural interest owes him much. But we apprehend he may not be a practical farmer, and we therefore call the attention of those who are, to a brief comment on the above experiment.

The putting of two hundred loads of stable manure in an acre of (probably) sandy, light land, having little retentive power, was no way to test the value of such manure. The manure so applied would largely steam away into the air, and go to benefit the farms of all mankind, about as much as the land on which it was put. If Mr. Woolley had applied ten loads of marl to one acre; ten loads of marl and ten of stable manure to another; and twenty loads of stable manure to a third, the indications would not have been, as they were, that one load of the marl was worth more than ten loads of stable manure. We have not one doubt that they would have indicated a very high value for the marl, and we believe that if experiments were to be repeated for a lifetime, they would prove (in fact hundreds of experiments for these twenty years have proved) that this marl is worth far more than the "New-Jersey Fertilizer Company" are proposing to furnish it for, all along our coast and on the banks of our rivers, wherever it can be shipped nearly to the place. But we are always sorry to see statements which seem to depreciate the value of barn manure. The husbandman should think much of this, should preserve it carefully, use the last load, and then purchase fertilizers to supply the deficiency, inasmuch as no barn furnishes as much manure as is to be desired; and since the recent opening of that immense bed of marl on the New-Jersey shore, at a point most favorable for shipping, we have no doubt that the trade in it will be profitable both to the seller and the buyer.

MR. MECHI'S EXHIBITION.—Mr. Mechi's annual gathering was held this year on the day succeeding the Royal Agricultural Society's Exhibition at Chelmsford. Six hundred were present; more than ever before. By a liberal application of capital, Mr. Mechi has converted 175 acres of before nearly worthless land into something like a garden. His draining is three and a half feet deep. His irrigation is magnificent. All his manures are applied in a liquid form, scarcely differing in appearance from rain water a little riled, as if in a barrel of it there were dissolved a handful of concentrated manure, or a shovelful of common barn-manure. Whether he makes or loses money by his farming we know not; but from having seen in 1853 his enormous crops of wheat, barley, turnips, &c., &c., and knowing as we did from adjoining lands, not yet reclaimed, how miserable his soil was a few years before, we could not but believe that in the end his farming will pay. There is not capital in our country to expend as lavishly as he expends it. The time has not yet come, nor will it for a long time, for us to expend as much on a single farm. If we thought it necessary we would warn our countrymen against it. But we hardly think it is. Hundreds of dollars, we believe, are lost by not reclaiming our wet lands soon enough, to where one is by reclaiming them too soon; and the danger among us of using capital in agriculture too sparingly is greater than of using it too freely; but good sense is profitable to direct, and we suppose that Mr. Mechi's example would be somewhat better for an agriculturist who has a very lucrative trade in Broadway, in Chestnut or Baltimore street, than for one who looks solely to the land for his money. N.

TERMS.—We promised in a former Number to adhere, as far as possible, to the use of terms which are universally understood; and occasionally to explain scientific terms in a little vocabulary for that purpose. In pursuance of that plan we give the following:

Sulphate of Lime; Gypsum, Plaster of Paris; a chemical compound of 40 parts of sulphuric acid (oil of vitriol) to 28 parts of lime and 18 parts of water. The experiment of putting plaster with green manure for the corn crop has succeeded admirably in many trials.

Sulphate of Ammonia; a chemical compound of sulphuric acid and ammonia, very soluble in water, and favorable to the growth of plants. It is obtained from the water of gas works.

Carbonate of Lime; a compound of carbonic acid and lime, 22 parts of the acid to 28 parts of lime. Marble, common lime stone and a portion of marls, and a small portion of all soils, are carbonate of lime. Carbonic acid is the gas which rises from foaming beer, cider or wine; also from soda water, and from a bit of chalk or lime-stone when you drop vinegar upon it. It is injurious, if taken into the lungs—destroys life if breathed in large quantities, as in the bottoms of dry wells—but is wholesome when taken into the stomach, as in soda water. It arises from fermenting manure heaps, also from rich soils; water readily absorbs it, and brings it down in the form of rain. It constitutes a large portion of the food of all plants.

Carbonate of Ammonia; a compound of carbonic acid and Ammonia. Ammonia is composed of 14 parts of Nitrogen and 3 of Hydrogen. It rises from fermenting or decaying substances, and combines with carbonic acid, which springs from the same sources, forming with it carbonate of ammonia, a volatile gas, that is, one which flies away in the air. What is meant by fixing the ammonia is this:—Carbonate of ammonia is volatile, that is it flies away in the air and is lost from fertilizers which contain it. By putting in plaster (or sulphate of lime) if the manure be in a moist state, the volatile carbonate of ammonia is changed to the soluble sulphate; and in this form it remains for the future use of plants. Hence the great utility of applying plaster to all manures and keeping them in a moist condition.

Guano Poisonous.—Agriculturists should be cautious not to handle guano, or permit those in their employ to do so, with sore hands, as the poison will communicate with the blood, through a cut or scratch, when otherwise there would be no danger. Several lives have been lost in this and other countries, from a neglect of this precaution. The danger cannot be great, but should be avoided. Nor is this peculiar to guano. The handling of any thing liable to prove poisonous, as the bodies of animals that have died of disease, human bodies in post-mortem examination, and even spoiled articles of food, should be avoided, unless the hands are sound and the skin entirely unbroken. Not that the danger in any of those cases is very great; but it is well enough for all to know that the putting of scratched, cut or bruised fingers into substances that may be poisonous is not quite safe. N.

The twenty-eighth annual fair of the American Institute, is now opened at the Crystal Palace in the city of New-York, and will close on Saturday evening, October, 25th, 1856. The Annual Exhibition of Cattle, of all breeds, and all other useful Farm Stock, will be held on on the 14th, 15th and 16th days of October, 1856, at Hamilton Square, a beautiful plot of ground of ten acres, granted by the Corporation to the American Institute for the express purpose; it lies between the Third and Fourth avenues, with its entire front on Third avenue, about four miles from the City Hall. The omnibusses and railroad cars pass the same continually throughout the day, and afford every facility for passengers to go out and return at pleasure. The most ample and comfortable arrangements for the Stock will be made, and the premium list will be found satisfactory. N.

BARLEY WITHOUT BEARDS.

It is even so. A variety of barley has been discovered in the gulches of the Himalayan Mountains, entirely free from those annoying and poisonous beards attached to all our common varieties.

The undersigned obtained 7 grains of this new variety three years ago, and being much pleased with its general appearance and productiveness, has spared no pains to multiply this small quantity as fast as the Shanghais and other birds would allow.

Its merits for grinding or malting have not been traced, and the quantity is now too small to squander in that way, when every tiller of the soil who sees it is anxious to have a few grains, not doubting it will prove a valuable acquisition. I have sufficient, however, to furnish all persons interested who will be likely to see this notice, with one head each, containing 30 to 60 grains. Send me your address, on a stamped envelope and I will enclose a head, and send it back by return mail, with printed instructions for cultivating in a way to insure a large return from a small quantity of seed. Should this new variety be found to answer all the purposes of the common barley, a few years will suffice to drive the "Barley Beards" from the country.

Should any person desire more than the one head, I will send a package of 700 to 800 grains securely enveloped, by mail, post-paid, for 25 cents, accompanied with a few heads, to *prove the fact* of its being beardless. Address, I. W. Briggs, West Macedon, Wayne Co., N. Y.

Preserving Apples.—If apples are carefully packed in hard wood sawdust, (how it would be with pine we know not,) they will keep in an open garret through our coldest winters. This we have tried, and we know it for a certainty. But in packing, care should be taken that none of the apples touch the barrel nor each other. We have had them open in fine order, when thus packed, long after those in the cellar were rotten, or so withered as to be useless.—N.

A Gem.—An eminent modern writer beautifully says: "The foundation of domestic happiness is faith in the virtue of woman; the foundation of all political happiness, is confidence in the integrity of man; and the foundation of all happiness, temporal and eternal—reliance on the goodness of God."

To the Reader.—Several gentlemen from various parts of the country have enclosed to us the price of this journal to single subscribers. We take this in all cases to be a voluntary contribution to sustain our efforts by paying a little more than the lowest price; but, whatever be the motive, they have our hearty thanks. Equally hearty thanks do we give to another class. Many residing in the East, but having a son, a son-in-law, or perhaps a brother, cultivating the soil of the far West, have ordered our paper to be sent to them, with the double object, as we suppose, of encouraging us, and of presenting a token of remembrance, a valuable present, which will last all the year, to a distant relative. We regard this as a peculiar favor, because it tends to make our journal still more extensively known. We learn, also, that others—persons to whom we have sent specimen numbers—are busily at work, getting up clubs, entitling them to our journal at reduced rates. Success to them. We will forward the premium books promptly; or any one, sending six or more names, may retain one-fourth of the money, if he chooses, as we have stated otherwhere. (See 2nd page, cover.)—Eds. P., L. & A.

To Advertisers.—Our subscription list is increasing. We commenced this volume with 5000 copies, and have a reasonable prospect of a large increase hereafter; consequently our journal will be an excellent medium of communication between the manufacturers of farm implements and those who use them.

We would gladly aid the manufacturer of implements of real merit; and at the same time we would carefully guard the farmer against the purchase of implements which we do not believe would give a full return for his money.

Manufacturers of such implements as will show well for themselves, will please let us hear from them.—Eds. P., L. & A.

N. Y. State Agricultural College.—A meeting of the Trustees of this Institution, was held at Ovid on the 12th inst. Hon. John A. King was re-elected Chairman for the ensuing year, and vacancies in the Board—occasioned by the death of John Delafield, the resignation of N. B. Kidder as Treasurer and Trustee, and T. Delafield as Trustee—were supplied by the election as Trustees of Hon. J. B. Williams, of Ithaca, Rev. Amos Brown, of Ovid, and Hon. Samuel Cheever, of Waterford. Joel W. Bacon, of Waterloo, was elected Treasurer, and Rev. Amos Brown, Secretary. Messrs. Bacon, Brown and N. P. Ellis, of Ovid, were appointed a Committee to obtain subscriptions, and desired to obtain special subscriptions for the endowment of the "Delafield Professorship of Agricultural Chemistry." The Committee on Subscriptions reported the amount subscribed as exceeding $40,000, which, with the $40,000 appropriated by the Legislature for the endowment of the College, "renders its establishment in full and successful operation at an early day no longer a matter of question." It is said that the people of Seneca county, and especially the citizens of Ovid, have subscribed liberally, and, it is anticipated that the farmers and friends of Agricultural Education in other sections will aid in endowing this State Institution.

[Since the above was in type, we learn that the Hon. Samuel Cheever, ex-President of the State Agricultural Society, has been appointed President of the Society, and has accepted. We learn also that the College is fully located at Ovid, Seneca County, on a farm of 670 acres.]

Lean Diet.—A Methodist minister at the West, who lived on a very small salary, was greatly troubled at one time to get his quarterly instalment. He at last told the paying trustee that he must have his money, as his family was suffering for the necessaries of life. "Money?" replied the steward. "*You preach for money!* I thought you preached for the good of souls!" "*Souls!*" replied the minister; "I can't *eat* souls, and if I could, it would take a thousand such as yours to make a decent meal"

HOTEL LIFE IN NEW-YORK.—Many noble natures are ruined by the fashionable follies and vices of American society. The old relations and endearments of home are almost unknown in gay circles; there is no inward life, no retirement, in which the graces of the heart are nurtured. All is life outward, gay, dazzling, aiming at display, asking for admiration. The *Transcript* has some pertinent remarks on the influence of hotel life in New-York:

"Take, for instance, a woman brought up in one of our New-England or western towns, of good parentage, some culture, and decided attractions: you have the germs of a superior character. Choice society, retirement, a life of tranquil improvement, would develop the bud into a consummate flower. Perhaps such a girl marries a business man, who brings her to a New-York hotel of the first class. For the first time she is exposed to an epitome of the great world; daily she is seated beside a foreign adventurer or an old coquette. The rude and the gentle, the pleasure-seeker and the speculator, the politician and the trader, the vulgar and the cultivated—all mingle in the sphere of her daily life. Having no house-keeping to attend to, time hangs heavily on her hands; she loiters in the drawing-room, and chats on the stair-case; she dresses elaborately for strangers' eyes; partly from curiosity and partly from *ennui*, she meets half-way advances to an acquaintance, and before the winter is over, is on familiar terms with scores of people, of whose antecedents she knows nothing, and whose companionship fritters away her time, and begets a love of admiration, which finally becomes as requisite an excitement as alcohol to the inebriate. This feeling grows less and less fastidious, and exacts more in quantity than quality; emulation feeds it. To outdo the others of her sex in the house, and collect the largest circle, or retain the greatest beau, is the goal of her ambition. She soon forgets how to blush, and learns to talk loud, loses all charm for the refined and intelligent, and prides herself upon being *fast*. When some country cousin or early friend meets her unexpectedly, it is difficult to believe she is the same person known of yore, so completely is the down rubbed off the peach, so wholly is the original interest of character evaporated. To unsex a sweet and modest girl, there is no quicker process than unmodified hotel life in Gotham. The picture, however, must be seen and studied to be appreciated.—*New-England Farmer.*

PROFIT OF FRUIT.—Examples almost without number may be given, where single trees have yielded from five to ten dollars a year in fruit, and many instances in which twenty or thirty dollars have been obtained. If one tree of the Rhode Island Greening will afford forty bushels of fruit, at a quarter of a dollar per bushel, which has often occurred, forty such trees on an acre would yield a crop worth four hundred dollars. But taking one quarter of this amount as a low average for all seasons and with imperfect cultivation, one hundred dollars would still be equal to the interest on fifteen hundred per acre. Now, this estimate is based upon the price of good winter apples for the past thirty years, in one of our most productive districts; let a similar calculation be made with fruits rarer and of a more delicate character.

Apricots, and the finer varieties of the plum, are often sold from three to six dollars per bushel; the best early peaches from two to three dollars; and pears, from hardy, productive trees, two to five bushels per tree, with good management is a frequent crop, and on large pear trees five times this quantity. An acquaintance received eight dollars for a crop grown on two fine young cherry trees, and twenty-four dollars from four young peach trees, of only six years' growth from the bud. In Western New-York, single trees of the Doyenne or Virgalia pear have often afforded a return of twenty dollars or more, after being sent hundreds of miles to market. An acre of such trees, well managed, would far exceed in profit a five hundred acre farm.—*American Agriculturist.*

AMERICAN ENTERPRISE.—One of HOE's celebrated six-cylinder printing presses—with experienced workmen to superintend it—was sent from this city by the Ericsson, on the 10th inst. It is to be used for printing Lloyd's Weekly Newspaper, in London. This is a large first-class weekly journal, having a circulation of 140,000 copies. The time was when we used to import our printing presses from London, but the tables have turned in our favor, and we are paying back our debts with compound interest. —*Scientific American.*

GOLDEN RULES OF LIFE.—All the air and the exercise in the universe, and the most liberal table, are but poorly sufficient to maintain human stamina if we neglect other operatives—namely, the obedience to the laws of abstinence, and those of ordinary gratification. We rise with a headache, and set about puzzling ourselves to know the cause. We then recollect that we had a hard day's fag, or that we feasted over-bountifully, or that we stayed up very late; at all events, we incline to find out the fault, and then we call ourselves fools for falling into it. Now, this is an occurrence happening almost every day, and these are the points which run away with the best portion of our life before we find out what is for good or evil. Let any single individual review his past life: how instantaneously the blush will cover his cheek when he thinks of the errors he has unknowingly committed, because it never occurred to him that they were errors until the effects followed that betrayed the cause. All our sickness and ailments and a brief life mainly depend upon ourselves. There are thousands who practice errors day after day, and whose pervading thought is, that everything which is agreeable and pleasant cannot be hurtful. The slothful man loves his bed—the toper his drink, because it throws him into an exhilarative and exquisite mood—the gourmand makes his stomach his god—and the sensualist thinks his delights imperishable. So we go on, and at last we stumble and break down. We then begin to reflect, and the truth stares us in the face, how much we are to blame.—*Home Journal.*

INSTRUCTION IN AGRICULTURE.—In the kingdom of Prussia there are five Agricultural Colleges, and the sixth is about to be opened. In these colleges are taught, by both theory and practice, the highest branches of science connected with the improvement of the soil. Of Agricultural Schools of a more elementary order, there are ten; there are also seven schools devoted to instruction in the culture of flax; two specially devoted to instruction in the management of meadow lands; one for instruction in the management of sheep; and there are also forty-five model farms, intended to serve in introducing better modes of agriculture; in all, seventy-one public establishments for agricultural education, not to mention others of a kindred nature, or those private schools where the art and science of good farming are taught.

Prussia is a monarchy, with fifteen millions of people. New-York is a republic, with three millions, and a territory which, though not quite half as large, is richer and better situated, the means of transportation incomparably superior. Prussia has seventy-one public establishments to instruct her people in farming—the science of sciences, and the art of arts. New-York has not one; and the proposition to establish a single Agricultural College has again and again been voted down in her Legislature. Ought so shameful a contrast to exist between that monarchy and this republic?—*Tribune.*

THE PHILOSOPHY OF RAIN.—To understand the philosophy of this beautiful and sublime phenomenon, so often witnessed since the creation of the world, and so essential to the very existence of plants and animals, a few facts derived from observation and a long train of experiments must be remembered:

Were the atmosphere everywhere at all times of a uniform temperature, we should never have rain, hail or snow. The water absorbed by it in evaporation from the sea and the earth's surface would descend in an imperceptible vapor, or cease to be absorbed by the air when it was once fully saturated. The absorbing power of the atmosphere, and consequently its capacity to retain humidity, is proportionately greater in warm than in cold air. The air near the surface of the earth is warmer than it is in the region of the clouds. The higher we ascend from the earth the colder we find the atmosphere. Hence the perpetual snow on very high mountains in the hottest climate.

Now, when from continued evaporation the air is highly saturated with vapor, though it be invisible and the sky appear cloudless, yet if its temperature is suddenly reduced by cold currents of air descending from a higher to a lower latitude, its capacity to retain moisture is diminished, clouds are formed, and the result is rain. It condenses, it cools, and like a sponge filled with water and compressed, pours out the water its diminished capacity cannot hold. How singular, but how simple the philosophy of rain. What but Omniscience could have devised such an admirable arrangement for watering the earth?—*Selected.*

Book Notices, Etc.

Dred; a tale by Mrs. H. B. Stowe. Phillips & Sampson, Boston. 2 Vols.; 700 pages. $1.75.

This book, if not the lineal descendant, at least the immediate successor of Uncle Tom's Cabin, has been laid upon our table, and read with no ordinary interest. The bloody aspects of the former are chiefly omitted in this. The place of Eva is occupied by one of the most fascinating of young ladies, just returned from a New-York boarding-school, and at first naughty enough to be "engaged" to three suitors at the same time, but afterwards, under the influence of the example of personal friends, and of her own experience, is modelled into a most lovely character, far more true to nature, and far more pleasing to us, than that of Eva. She was quite too perfect for a descendant of Adam, and her unnatural maturity of mind and heart were at the same time brought out apparently without the exercise of any formative influence, and without meeting with any opposition or hindrance. In commending virtue, and illustrating the transcendent value of a sensitive and enlightened conscience, and the charm of true piety, this work has no superior and few equals, and the secret of this is in the fact, that these lessons are not obtruded upon her or upon the reader, but are living experiences, growing out of the ordinary course of events. They are a part of real life, and prove themselves to be vital truths, in the absence of which there is no true life, and nothing worth living for. Vices and lesser faults, as they are often regarded, such as selfishness in general, and peevishness and fretfulness, perhaps the most common forms of selfishness, and which produce, in real life, more misery than all the murders and other felonies combined, are made to appear repulsive and odious. Aunt Nesbit teaches quite as successfully as Nina, and Clayton and Tom Gordon are alike capital instructors, which neither Milly, nor old Uncle Tiff is second to any of them. These characteristics are quite as obvious as its anti-slavery influence, and are more constantly before the mind of the reader; but although it is probable that all these are intended by the author to be subservient to this one leading point, they have a power of their own of great value, and quite independent of every thing else. But for this, we should write differently in reference to the whole, for though fiction is a most effective style of controversy, it is not always logical nor fair. He who draws upon his imagination for his facts, and upon his genius for his combination of incidents, his causes and his consequences, must be quite destitute of skill not to make out his own case.

But those portions which bear directly upon the vexed question of Slavery are "done" with more tact then in Uncle Tom's Cabin. From these volumes it would appear, as it does in real life, that many slaveholders are among the best of good people, while, like all the rest of the world, communities present a great variety of good and bad, the majority being remarkable neither as the one nor the other.

As a whole, there is one prominent artistic defect. Nina and Dred are each the heroine and hero of half the story, and not only are they strangers to each other, but are quite separate and disconnected in the narrative. Dred is scarcely named before Nina, and many of those connected with her have disappeared, and most of those which remain play a secondary part in the plot. This has the effect of making two stories, very unlike each other,—and each essentially independent of the other.

But the book will be read the world over, and in the present excited condition of the public mind, its influence will be immense, far greater than that of any purely logical argument, or philosophical essay, though ever so able or ever so sound.

List of Patents.

Samuel Arnold, Wilson county, Tenn., for fly-trap.

James H. Banta, Piermont, improved weather strip for doors.

Jno. A. Bailey, Jersey City, assignor to John Warrin, of New-York, for reel for fishing rods.

Thos. R. Bailey, Lockport, improved mortising machine.

Moody Belknap, Boston, improvement in spike machines.

Sherburn C. Blodgett, Philadelphia, improvement in sewing machines.

Joseph Bond, Jr., Philadelphia, improvement in sewing machines.

John Boynton, East Hartford, improved brick press.

Henry Brown and William Brown, Philadelphia, improvement in ice-breaking boats.

John M. Brooks, United States Navy, improvement in means for attaching and detaching boats to and from the tackle.

Wm. S. Carr, New-York, improvement in water-closets.

Wm. B. Coates, Philadelphia, for envelopes.

Chas. H. Dana, West Lebanon, N. H., improved sash supporter.

William H. Danforth, Salem, improved printing press.

S. R. C. Denison, Rochester, improvement in carpet fastenings.

Solomon B. Ellithrop, New-York, improved metal pavement.

John W. Fowble, Cincinnati, improvement in mechanism for compressed air railroad signals.

Samuel H. Gilman, New-Orleans, improvement in bagasse furnaces.

Lorenzo D. Gilman, Troy, improved wrench.

Isaac H. Giffing, New-York, for instrument for breaking ice.

Augustus J. Goffe and Dennis Goffe, Cohoes, improvement in knitting machines.

J. H. Gooch, Oxford, N. C., improvement in straw cutters.

Peter Hannay, Washington, D. C., improved blanks for bank notes, bills, etc.

Wm. A. Jordan, Thibodeaux, La., improvement in means for guiding line ferry boats, or flying bridges.

Jacob O. Joyce, Cincinnati, improvement in corn and cob mills. Ante-dated February 5, 1856.

Joseph M. Lippincott, Pittsburgh, improvement in locks.

T. Kenton Lyon, Richmond, improved pen-holder.

David Munson, Indianapolis, improvement in lightning rods.

Sydney W. Park and Edgar S. Ellis, Troy, improvement in rotary knitting machines.

Anson H. Platt, Yellow Springs, Ohio, improved door stave.

John R. Sees, New-York, improvement in heating feed-water apparatus for steam boilers.

John Shopland, Honesdale, Pa., improved combined steam and hot-air cooking stoves.

Gilbert Smith, Buttermilk Falls, improvement in breech loading fire-arms.

D. B. Spooner and H. B. Spooner, Springfield, Mass., for mode of coloring photograph pictures on glass.

Meliwether Thompson, St. Josephs, Mo., improvement in hemp brakes.

Francis A. White, Roxbury, improvement in methods of stuffing leather.

Linus Yale, Newport, N. Y., improved bolt for vault and safe doors.

Richard Hoe, N. Y., for method of securing types on rotary beds.

Calvin Adams, Oak Hill, N. Y., corn sheller.

Daniel N. Alard, Bokely, Ohio, washing machine.

James T. Alstun, Raleigh, N. C., improvement in invalid supporters.

Luther Atwood and Wm. Atwood, Waltham, Mass., improvement in the production of oil from cannel coal.

Luther Atwood and William Atwood, Waltham, Mass., improvement in preparing oil from bitumens.

Ephraim Hall, Canton, O., improvement in mowing machines.

E. R. Barnes, Brookfield, Conn., and James B. Blakslee, Newton, Conn., improvement in felting hat bands.

Smith Beers, Naugatuck, improvement in odometers.

Jno. Drummond, Norwalk, Conn., improvement in steering apparatus.

Anthony Faas, Philadelphia, improvement in accordions.

Chas. R. Gardner, Detroit, improvement in dies for screw blanks.

Theodore Gomme and Eugene Augusta Beaubrand, Paris, France, improvement in manufacture of sheet metal ware.

Jabez W. Hayes, Newark, fruit box.

Adolpus Heddeans, Pittsburgh, improved nail plate feeding apparatus.

Fredrick W. Hoffman, New-York, improvement in fire-arms.

Ira Holmes, Leicester, N. Y., improvement in filtering sand for cider.

Chester Hunter and N. Ishsm, Norwalk, O., improved method of raising, lowering and operating farm gates.

Cyrus F. Kneeland, Buffalo, improvement in coal hods.

Frederick Kahlman, Lille, France, improvement in vehicles for paint compounds.

Frederick D. Newbury, Albany, assignor to Rickard Varick De Witt, Jr., same place, improved fire-arms.

Abner N. Newton, Richmond, Ind., improvement in fire-arms.

Wm. Patton, Towanda, Pa., improved sash fastener.

Warren S. Pierce, North Attleborough, improved gold washer and amalgamator.

George M. Ramsay, New-York, improved files.

St. Julien Ravenel, Charleston, improvement in artificial stone.

L. R. Saterlee, Rochester, mode of attaching nkstands to desks.

John Shopland, Honesdale, improved spring pullies for window sashes.

A. B. Smith and William Weaver, Clinton, Pa., improved machine for throwing projectiles.

Edward Q Smith, Cincinnati, improvement in manufacturing chairs.

Wm. F. Shaw, Boston, improvement in treating India rubber.

Jerome B. Shaw, Pittsburgh, method of lettering and ornamenting glass.

Andrew Sprague, Coldwater, Mich., improvement in corn harvesters.

Alva B. Taylor, Newark, improvement in the manufacture of hat bodies.

Thos. W. Taylor, Connelton, Ind., improvement in spinning frames.

Geo. W. Thatcher, Philadelphia, improved chimney ceral.

Wm. O. Thompson, Orange, Mass., and Leonard Harrington, Worcester, Mass., improved mode of extracting stumps.

Chester Van Horn, Springfield, Mass., improvement in planing metal.

Chas. W. and Jno. W. Willard, Dorchester, Mass., improvement for valve gear for steam hammers.

George W. Wood, Green Bay, improved rock drill.

Wm. Wright and Geo. Brown, Newcastle-upon-Tyne, England, improvement in blast furnaces.

Wilhelm Ziervogel, Treskow, Pa., improvement in processes of separating silver from the ore.

Robert P. Bradley, Cuyahoga Falls, O., assignor to Joel Wisner, East Aurora, N. Y., machine for wringing clothes.

Hezekiah Bradford, New-York, assignor to Horatio Bogert, same place, improved ore washer.

Thaddeus Fairbanks, St. Johnsbury, Vt., assignor to John E. Schooley, same place, improvement in refrigerators.

Isaac Harmeans, Tamaqua, assignor to himself and Wm. Beckel, same place, improvement in brick machines.

Samuel Whitemarsh, Northampton, assignor to Wm. J. Demarest, Orange, N. J., improved vapor burning lamps.

Henry W. Adams, New-York, improved mould for pressing glass fountain lamps.

Levi Averill, Elmira, improvement in lime-kilns.

Jno. L. Brabyn, New-York, improvement in furniture polish.

Lewis Buchholtz, Richmond, Va., improved blastic compound.

John H. Belter, New-York, bedsteads.

Gail Borden, Jr., Brooklyn, improvement in concentration of milk.

Thos. Brownfield, George's Township, Pa., improvement in wheels for carriages.

John Broughton, Chicago, improved door spring.

Joel Bryant, Brooklyn, carpenter's guages.

Chas. S. Bruff, Baltimore, improved sash supporter.

Oscar L. Cowles, Township of Teconsha, Mich., and Allen L. Denring, Township of Homer, Mich., improvement in clamping and upsetting fire.

R. Eickemeyer, Yonkers, improved method of regulating velocity of feed for sawing mills.

Geo. Fetter, Philadelphia, and John S. McClintock, Libertyville, Ill., improvement in coupling pipes.

Ephraim D. Poss., Mainville, O., improved farm fence for rolling ground.

Wm. W. Hopkins, Chesterfield factory, N. H., improvement in knife-cleaners.

Lansing E. Hopkins, Brooklyn, improvement in felting compounds.

Abraham Southworth, New-York, improvement in paddle wheels.

Isaac G. Hubbs, New-York, improvement in machines for adding numbers.

Wm. H. King, Philadelphia, assignor to himself and Isaac Hyneman, of same places, machine for sweeping gutters.

F. A Jewett, Abingdon, Mass., improvement in thorough braces for carriages.

Sherman McLean, Reynales Basin, N. Y., improvement in cupping instruments.

Larrkin L. Moore, Petersburgh, improvement in harvesting machines.

Wm. Osborn, Louisville, improvement in machines for pressing bonnets and bonnet frames.

Chas. Parkhurst and Chas. Weed, Boston, improved machine for forging horse-shoe nails.

Jno. Potter, Ellicottsville, improved tenoning machine.

Adonijah Randel, New-York, improved bristle separator.

Edwin A. Russell, Hookset, N. H., hand-etamp.

Henry A. Rains, Nashville, improvement in cart saddles.

Edward S. Renwick, New-York, improvement in valve motions for steam engines.

Nathan Scho lfield, Norwich, Conn., improvement in projectiles.

Francis E. Sessions, Worcester, improved window sash.

Jno. S. Shapter, New-York, improved arrangement of steam cylinder within the boiler.

John S. Shepler, Beaver, Pa., washing machine.

Wm. B. Slaughter, Chicago, head rest to be used in railroad cars.

Wm. Tinker, Kelloggeville, Ohio, improvement in harvesters.

R. W. Thickens, Brasher Iron Works, N. Y., improved vices.

Chas. H. Watkins, New-York, improved self-clearing chimney cowl.

Benj. Welgert, New-York, improvement in water-proofing textile fabrics.

Greenleaf A. Wilburn, Skowhegan, Me., improved grapple for raising sunken bodies.

Clarendon Williams, Franklin, Mo., improved apparatus for boring artesian wells.

Wm. M. Barton, Russellville, Tenn., assignor to himself and Robert M. Barton, improvement in machines for drilling and dressing stone.

Levi J. Henry, New-York, assignor to Benj. J. Hart, of same place, mosqueto canopy.

Abijah D. Stowell, Fulton, assignor to John A. Place, of same place, improved wheelwright's machine.

Chas. Moore, Trenton, N. J., improvement in the process of preparing linseed, &c., for pressing in extracting oil.

Wm. M. Barton, Russelville, Tenn., assignor to himself and Robert M., improvement in rock drills.

Edward C. Shepherd, New-York, improvement in magneto-electric machine.

RE-ISSUE.

Jonathan Reed, Alton, improvements in reaping machines. Patented March 13, 1842.